THE JOURNAL

of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 146, NO. 6 CHICAGO, ILLINOIS JUNE 9, 1951
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EARLY DETECTION OF BRONCHIOGENIC CARCINOMA

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The over-all salvage rate for bronchiogenic carcinoma remains disappointingly low in spite of advances in its surgical treatment. Pulmonary resections for this neoplasm are now common and can be performed with low morbidity and mortality rates. The disappointing fact is that although surgical removal offers the best treatment available today, it cannot be applied to two thirds of the patients with bronchiogenic carcinoma because the cancer is so far advanced when first seen by the surgeon. The medical profession, having developed an acceptable treatment for cancer of the lung, is now confronted with the problem of its earlier detection in order to make its treatment more effective for the over-all group of persons with this disease.

Recently, we have surveyed our experience during the past three and one-half years with 362 patients having bronchiogenic carcinoma. Of this group, 180, or 50 per cent, were considered clinically inoperable when first seen because the cancer was so far advanced. Of the remaining 182 patients operated on, the lesion was found to be inoperable at exploration in 75, or 20 per cent of the total number. It was possible for us to resect the lesion in 107 patients, or only 30 per cent of the original number. In approximately one half of these, the resection was classified as palliative and not curative because of the extent of the lesion.

The patient, the physician and the natural history of the cancer itself all share in the responsibility for this state of affairs. A review of the histories of the patients in this series revealed that there was an average elapsed time of five months from the onset of symptoms until the patient sought medical advice. This delay is attributed to the casual attitude of the patient toward his symptoms and the failure of the cancer itself to produce any or, as far as the patient is concerned, only trivial symptoms during the initial few months. Of greater significance, however, is that another six month period, on the average, was consumed before the correct diagnosis was made or suspected after the patient presented himself to the physician. A total of 11 months was lost on the average before suitable treatment could be applied. It is not surprising, therefore, that only 30 per cent were resectable.

Through education of the public, with particular reference to the significance of a cough and the necessity for periodic roentgenograms of the chest, the delay on the patients' part may be reduced but its elimination will be difficult. The six months' delay on the part of the physician, however, constitutes a real challenge to all of us, which we must accept and answer.

What are the reasons for this six months' delay in the physician's suspecting or making a diagnosis of bronchiogenic carcinoma? It cannot be attributed to a lack of concern or conscience on the part of the physician in most instances. In almost all cases it is due to an error in the original diagnosis and the absence of a characteristic clinical pattern early in the disease. The symptoms of a bronchiogenic neoplasm are largely those of infection, common to almost any lung disease. Its onset is insidious, and its manifestations are not usually clearly indicative of the underlying cause until late in its natural course. For this reason, the physician is frequently fooled early in the course of the disease and makes an erroneous diagnosis of asthma, bronchitis, virus pneumonia, unresolved pneumonia, tuberculosis or a fungus disease.

Attitudes of mind may contribute to the delay in diagnosis. The medical profession as a whole does not fully appreciate the prevalence of bronchiogenic carcinoma. This tumor by apparent and probable actual increase is now the commonest cancer as a cause of death in men. The greatest number of cases occur between the ages of 40 and 60 years. If this prevalence were fully appreciated, bronchiogenic carcinoma would be high on the list of possibilities in the differential diagnosis for any pulmonary or bronchial lesion in a man over the age of 40. Suspicion alone of the possibility of this lesion leads to an earlier accurate diagnosis. Also the physician is naturally reluctant to make a diagnosis of such a serious tumor with all it entails, and he tends to favor a less serious condition which can be treated by simpler meas-

Read before the Section on Diseases of the Chest at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 29, 1950.

ures and carries a better prognosis. This reluctance should give way to an eagerness on the part of the physician to detect these neoplasms early, when a cure is still possible.

Virus or atypical pneumonia and unresolved pneumonia are two of the commonest erroneous diagnoses,

Fig. 1.—Roentgenogram of the chest taken in January 1949, revealing an area of obstructive pneumonitis in the right upper lobe.

which contribute to the delay in the discovery of bronchiogenic carcinoma. The diagnosis of virus or atypical pneumonia can be made only by inference; there is no positive diagnostic test for this condition. If a diagnosis of virus or atypical pneumonia is made and the lesion within the chest does not clear promptly, the physician must consider the possibility of another cause such as bronchiogenic carcinoma. Virus pneumonia accounted for over one half of the errors in diagnosis in patients having bronchiogenic carcinoma who were finally referred to us for treatment.

Fig. 2.—Roentgenogram of the chest of the same patient as in figure 1 taken in May 1949, revealing clearance of the obstructive pneumonitis by means of antibiotic therapy. A carcinoma is still present but not visualized.

Unresolved pneumonia is a diagnosis that should be discarded in view of an improved understanding of pulmonary lesions. Unfortunately it is used as a description of a lesion of unknown origin visualized in the roentgenogram. It infers a benign condition which should be treated conservatively. Yet pathologists do not recognize it as an entity and use the term fibroid pneumonitis to describe such a lesion. Fibroid pneumonitis usually results from an inflammatory process distal to a blocked bronchus, and the block may be due to a neoplasm. A true pneumonia will resolve promptly, and if resolution does not occur, another cause in differential diagnosis must be considered. Bronchiogenic carcinoma, bronchiectasis, abscess and tuberculosis are the common causes of an obstructive (fibroid) pneumonitis. In a man over the age of 40, the lesion must be considered due to carcinoma until proved otherwise. The proof may readily require surgical exploration.

The third factor influencing the delay in the diagnosis of bronchiogenic carcinoma is its natural history or pathologic course. Unfortunately there is a large group of patients in whom it is impossible for one to make the diagnosis at a time when surgery is still applicable. As a result of our study of 362 patients, we found that in 25 per cent the initial complaint that prompted the patient to seek medical advice was one indicating inoperability, such as headache due to a cerebral metastasis, loss of

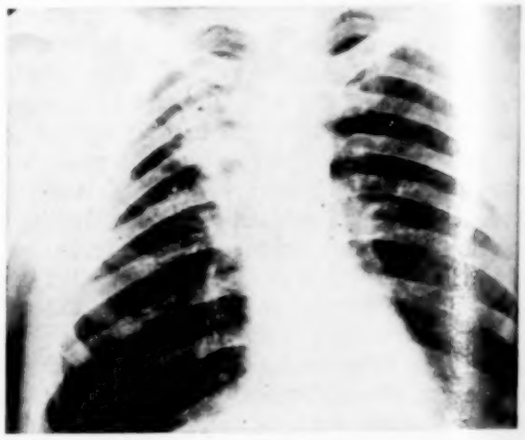

Fig. 3.—Roentgenogram of the chest of the same patient as in figures 1 and 2 taken in September 1949, revealing an atelectasis of a portion of the right upper lobe. Surgery at this time revealed a bronchiogenic carcinoma.

voice due to involvement of the recurrent laryngeal nerve, painless pleural effusion, dysphagia due to involvement of the esophagus, involvement of distant organs as the peritoneum, or subcutaneous metastases due to generalized spread of the cancer. The insidious course and the paucity of symptoms early in this group constitute an insoluble problem in diagnosis except by routine, periodic, roentgenographic examination of the chest. Twenty per cent of our patients had an undifferentiated bronchiogenic carcinoma. This cell type is highly malignant, rapidly invasive and tends to metastasize early. Only 8 per cent of the resections were made up of undifferentiated carcinomas, and only one of these patients has survived over 12 months. It is widely recognized that an undifferentiated carcinoma is practically a sign of inoperability in itself. If 25 per cent of the patients in whom the initial complaint indicated inoperability are added to the 20 per cent who have an undifferentiated type of carcinoma and allowance is made for some overlapping in the two groups, we estimate that roughly 40 per cent of patients having bronchiogenic carcinoma are inoperable when first seen by their physician. This leaves about 60

per cent, or two thirds, in whom early diagnosis may make a cure possible. Today we are getting the opportunity in only 30 per cent or less than one third.

SYMPTOMATOLOGY

Bronchiogenic carcinoma passes through early a silent phase of variable duration, depending on its growth potential. It produces symptoms only by breaking through the bronchial mucosa, which thereby produces an irritating cough, or by blocking the bronchus, with the resultant obstructive pneumonitis in the area of lung supplied by that bronchus. The cough is productive of mucoid, blood-streaked or rusty sputum. In many instances the first symptoms are common to the less serious respiratory disorders and consequently receive little serious attention. As time goes on, these symptoms become more severe, and new ones are added. Cough, pain, weight loss, hemoptysis, dyspnea, fever, recurrent respiratory infections, wheezing and hoarseness are the symptoms that develop later in the course of the disease. Cough is the most constant symptom and usually persists throughout the course of the disease.

Fig. 4.—Roentgenogram of the chest illustrating a lobulated unilateral mass with a surrounding pneumonitis typical of a bronchiogenic carcinoma.

Wheeze and hemoptysis usually occur early and are due to encroachment on the bronchial lumen or erosion of the mucosa. Pain is actually a late symptom unless it be due to the accompanying pneumonitis. The pain of the carcinoma itself is caused by pleural, chest wall or mediastinal involvement, all of which portend an already far advanced lesion. Weight loss, dyspnea, fever and hoarseness all come late. There is no characteristic symptomatic pattern for bronchiogenic carcinoma until late. We must raise our indices of suspicion to detect this lesion early without the advantage or benefit of a characteristic symptomatic pattern.

ROENTGENOGRAPHIC EXAMINATION

Roentgenographic examination of the chest is the most valuable single method available for the early detection of bronchiogenic carcinoma. The neoplasm itself may not be visualized usually, but its effects are seen as areas of obstructive pneumonitis (figs. 1, 2 and 3). Lesions within the hilum growing outside the bronchial lumen may appear as a lobulated unilateral mass. The shadow cast on the roentgenogram is composed of tumor, lymph nodes and the pneumonitis in the adjoining lung tissue (fig. 4). A tumor which grows mainly into and around the bronchus may produce collapse of an entire lung, a lobe or a segment, with retraction of the mediastinum and the diaphragm (fig. 5). Earlier the affected lung, lobe or segment may be emphysematous because

Fig. 5.—Roentgenogram illustrating segmental atelectasis of the right lower lobe due to bronchiogenic carcinoma.

of trapped air. An early roentgenographic sign of bronchiogenic carcinoma is a localized area of emphysema on expiration.

Tumors arising in smaller bronchi rapidly become obstructive and early give rise to a circumscribed, round or oval shadow in the roentgenogram. It must be differentiated from the tuberculoma, coccidioidal granuloma, cyst and abscess (fig. 6). Usually this is impossible except by exploratory thoracotomy. Not infrequently this type of lesion undergoes cavitation due to central necrosis or the associated pneumonitis (fig. 7). In such in-

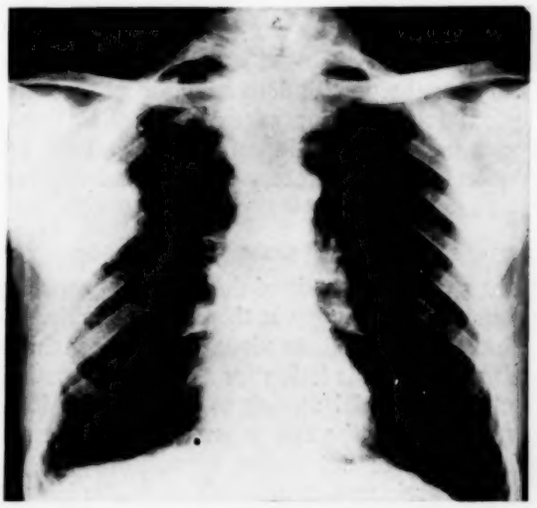

Fig. 6.—Roentgenogram illustrating peripherally located bronchiogenic carcinoma of the right upper lobe.

stances an erroneous diagnosis of lung abscess may be made by the roentgenologist.

Tumors arising in the extreme periphery of the lung may not cast a shadow on the roentgenogram. Four cases in this series were of this type. The initial symptom was pain. Surgical exploration revealed a plaque of carci-

noma involving visceral and parietal pleura. A peripheral opacity separate from the underlying lung may be visualized in the roentgenogram. Tumors of this type in the apex are referred to as superior sulcus tumors. They may occur on any surface of the lung. Pleural effusion may be the first sign of a peripherally located tumor.

Both posteroanterior and lateral roentgenograms should be utilized in any examination of the chest, because there are large areas in the lung fields not visualized by the ordinary posteroanterior roentgenogram alone. Small neoplasms may be obscured by the heart shadow, the arch of the aorta or the pulmonary vessels. A lateral roentgenogram will visualize lesions in these obscure areas. Bronchography may be of value in revealing an abrupt bronchial block. Laminography likewise is of great value in showing bronchial blocks or tumors in the above mentioned obscure areas.

One must always be mindful of the fact that roentgenograms reveal shadows only, and that there is nothing diagnostic of the type of shadow produced by a bronchiogenic carcinoma. By experience we have learned to make a roentgen diagnosis on the basis of percentage

Fig. 7.—Roentgenogram illustrating cavitary carcinoma of the left upper lobe.

possibilities. Very often actual surgical exploration is necessary for the precise determination of the nature of the lesion. Interpretation of the shadow in the roentgenogram must be made in correlation with the history, the physical signs, laboratory findings and observations made at bronchoscopy.

SPECIFIC METHODS OF DIAGNOSIS

Of the specific methods of diagnosis in bronchiogenic carcinoma, bronchoscopy is the most valuable. By this procedure, one is able to visualize the bronchial tree, obtain tissue from the lesion for study by the pathologist and collect bronchial secretions or washings for cytologic study. It must be remembered that all parts of the bronchial tree are not visible bronchoscopically. This means that carcinomas arising in the smaller bronchi are not accessible to either visualization or biopsy. Bronchial secretions or bronchial washings may be obtained from the suspected lobe. Malignant cells which have exfoliated from the neoplasm may be found in the material thus aspirated. Examination of the patient's sputum may likewise reveal the presence of malignant cells. In view of the limitations of bronchoscopy in the examination of the tracheobronchial tree, it must be remembered that a negative finding in bronchoscopy or failure to find malignancy in either a biopsy or in bronchial secretions or washings does not rule out carcinoma. In other words, a positive finding is of great significance but a negative finding does not rule out the possibility of carcinoma.

Lung aspiration or needle biopsy, although advocated by some, is, in our opinion, hazardous and superfluous. If one suspects carcinoma, exploratory thoracotomy should be done anyway, regardless of the findings by needle biopsy. The dangers of needle biopsy are air embolism, pneumothorax, spread of the carcinoma along the needle tract, tumor embolism and empyema. In our opinion the use of aspiration biopsy should be limited to those patients in whom exploratory thoracotomy is contraindicated and a proved diagnosis is desirable.

Another specific method of diagnosis in bronchiogenic carcinoma is exploratory thoracotomy. The risk of exploratory thoracotomy is very low, being no greater than the risk of exploratory laparotomy. It so happens that most of the lesions that will be confused with bronchiogenic carcinoma are amenable to and should be treated by resection. At the time of the exploratory thoracotomy, biopsy of malignant tissue in the hilar lymph nodes or at the extreme periphery of the lung may be performed. If the lesion is inaccessible for biopsy, either a segmental resection or a lobectomy should be done, the tissue examined by the pathologist immediately and a report given the surgeon. The appropriate procedure may then be carried out.

After completion of a careful history and physical examination, a roentgenographic examination of the chest and bronchoscopic examination for an indeterminate lesion in a man over the age of 40, exploratory thoracotomy is mandatory and should be accomplished without delay. The passage of time is inimical to the patient's best interest. Observation of the patient for a period of time is extremely unwise. If the lesion remains unchanged, one still cannot rule out the possibility of bronchiogenic carcinoma. If the lesion increases in size or a distant metastasis becomes evident, one has been guilty of loss of valuable time for the patient. The question the surgeon should ask himself in regard to all indeterminate chest lesions is this: Can I honestly tell the patient this is not a carcinoma? If he cannot, the patient should be advised to have an immediate thoracotomy.

EARLY DIAGNOSIS OF BRONCHIOGENIC CARCINOMA

The early diagnosis of bronchiogenic carcinoma is difficult if one demands absolute proof of the presence of this lesion for the diagnosis. However, if one's index of suspicion is maintained at a high level, the early detection of bronchiogenic carcinoma is not impossible. In about two thirds of the patients having this condition, early diagnosis is possible if one keeps in mind the prevalence of this type of cancer, its natural history and its symptomatology. Appropriate studies, including roentgenography, bronchoscopy and exploratory thoracotomy, are indicated to make the diagnosis.

Because of the natural course of bronchiogenic carcinoma, there is an early silent phase in which a lesion can be detected only by routine, periodic roentgenograms of the chest, as suggested by Overholt and Schmidt in 1949.[1] As a result of surveys for tuberculosis, as many

1. Overholt, R. H., and Schmidt, I. C.: Silent Phase of Cancer of the Lung, J. A. M. A. 141: 817 (Nov. 19) 1949.

as 10 asymptomatic carcinomas per 100,000 roentgenograms have been found. Mass surveys have been extremely valuable in case finding for tuberculosis and have reduced the incidence of far advanced cases by the discovery of minimal cases. In the future it may be possible to do the same for bronchiogenic carcinoma. In the meantime, we can improve our detection of those cases we are seeing every day by making an earlier diagnosis.

SUMMARY

The over-all salvage rate for bronchiogenic carcinoma remains disappointingly low in spite of advances in its surgical treatment. Pulmonary resection could be applied to only 107, or 30 per cent, of 362 patients having bronchiogenic carcinoma seen by us during the past three and one-half years. The patient, the physician and the natural course of the cancer itself are responsible for the late diagnosis of bronchiogenic carcinoma. A plea for the early detection of this lesion is made, and the symptomatology, the roentgenographic findings and specific methods of diagnosis are reviewed.

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ABSTRACT OF DISCUSSION

Dr. John C. Jones, Los Angeles: That a longer delay exists between the time the patient first consults his physician until the true diagnosis is made than between the time from the initial onset of symptoms until the patient consults his physician in regard to these symptoms is a shocking reality. In Dr. Paulson's series there was an average delay of five months from the onset of symptoms until the patient consulted his physician, and then there was another average delay of six more months after the patient went to his physician before the correct diagnosis was made. I reported a series of patients with carcinoma of the lung four years ago, and I was more encouraged about the outlook of early diagnosis of bronchogenic carcinoma at that time than I am now. In our group of cases, if the patients who are diagnosed by mass roentgenogram surveys are excluded, I believe there is a longer delay from the time the patient consults the physician until a correct diagnosis is made than there used to be five years ago. I tried to analyze these cases, and the only conclusion that I came to is that when there were only the sulfonamides, we physicians had a few drugs to use and the diagnosis was eventually made. Now we have too many drugs. Therefore, we start with the sulfonamides; then the patient is put through the whole gamut of antibiotics and he does not improve. Discouraged, he goes to another physician, who treats him with courses of the various antibiotics all over again. There are just too many different preparations, and the patient is subjected to a lot of therapy and is not exposed to any diagnostic acumen. There is going to be a limit to the technical improvements of pneumonectomy that a surgeon can contribute. The incidence of complications is low. Four years ago I reported a series of pneumonectomies in which the mortality was 4 per cent. The improvement in the results of the treatment of carcinoma of lung must come as the result of early diagnosis and mass roentgenogram surveys. Dr. Paulson stated that 30 per cent of his patients were operable, but half of these were patients in whom he was sure at the time of the operation that he was doing only a palliative procedure. Actually then he was offering a cure to 15 per cent, and not 30 per cent, of the operated patients. I do not believe the surgeon should hesitate, if he cannot find lymph nodes either peripheral or central, to do a so-called lobectomy biopsy. Certainly an older patient with a peripheral lung carcinoma and fibrotic and emphysematous changes may withstand a lobectomy without complication and dyspnea, and furthermore the end result of a cure may in a whole series of patients be just as good as, if not better than a pneumonectomy, which is hazardous in this type of patient. Then too, if it turns out that the patient has a benign lesion, only the lobe has been resected, and the patient has not been incapacitated. He has been given the protection of an earlier and an accurate diagnosis and with no sacrifice. If thoracotomy is done in patients who are hopelessly inoperable, then the physicians who are to care for these patients afterward are going to be discouraged with exploratory thoracotomy. If a patient is hopelessly inoperable, then that patient is not so well off or so comfortable as he was before the procedure. Such indiscriminate practice contributes only to the discouragement of the patient and the physician who treats the patient until the latter dies.

Dr. Donald L. Paulson, Dallas, Tex.: I agree with Dr. Jones about exploratory thoracotomy and obviously hopeless lesions. We are coming to the position more and more that if we are sure that a cancer is of the undifferentiated small cell type, we most usually should not offer surgery to the patient, because our results are poor from the standpoint of resection in that group.

THE HEREDITY OF EPILEPSY AS TOLD BY RELATIVES AND TWINS

William G. Lennox, M.D., Boston

"Can there be marriage and children"? This is one of the most urgent questions propounded by the epileptic and his relatives, and one of the most difficult to answer. Answers given by doctors differ radically. One will deny and the next will affirm the importance of heredity. In giving advice, many forget that the problem refers to a person possessed of not just one transmissible trait, but of many. A condition that argues against marriage and children may be neutralized, or even outweighed, by other conditions that favor marriage. These will be considered after the testimony of relatives has been reviewed.

OPINIONS IN THE PAST

For the most part, doctors and laymen alike have recognized a transmissible quality. Hippocrates called epilepsy a familial disease. Burton's "Anatomy of Melancholy" states that the ancient Scots "instantly gelded" any man with falling sickness and if a woman "were found to be with child, she with her brood were buried alive." The laws (happily moribund) of 14 of our states go one step further—forbidding marriage of the epileptic, and even threatening fine or imprisonment for any who assist.

In the important subject of genetics, man plays second fiddle to the fruit fly. In spite of the importance of the question of heredity of epilepsy to both patients and the public, published data on the subject have, in general, been conflicting or unconvincing. References and background information will be found in certain previous pub-

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Read before the Section on Nervous and Mental Diseases at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 29, 1950.

This article is no. LVII in "Studies in Epilepsy." Aid was received from the Rockefeller Foundation and the United States Public Health Service, Social Security Agency.

lications.[1] At present, I am concerned with evidence garnered from two groups: first, the 20,000 near relatives of approximately 4,000 epileptic patients, and, second, 122 twin pairs affected by seizures.

METHODS OF STUDY

One must first consider the inaccuracies that attend a statistical study of the symptom complex called epilepsy. There are uncertainties of definition and of differential diagnosis. In addition, the family and other history must be obtained about an illness which many persons consider a deep disgrace. In order to study the relative influence of genetic and acquired factors in epilepsy, one must separate patients into those with and those without evidence of brain damage that existed prior to the first seizure. Evidence includes the past history, the pattern of the convulsive phenomena, neurological examination and the findings in certain tests, such as the pneumoencephalographic and the electroencephalographic. Decision is complicated by the fact that the observed brain damage may be a result, rather than a cause, of the epilepsy. Because evidence both of a brain lesion and of a significant family history may be hidden, the assignment of cause or causes in many cases must be deferred. Some writers employ a name

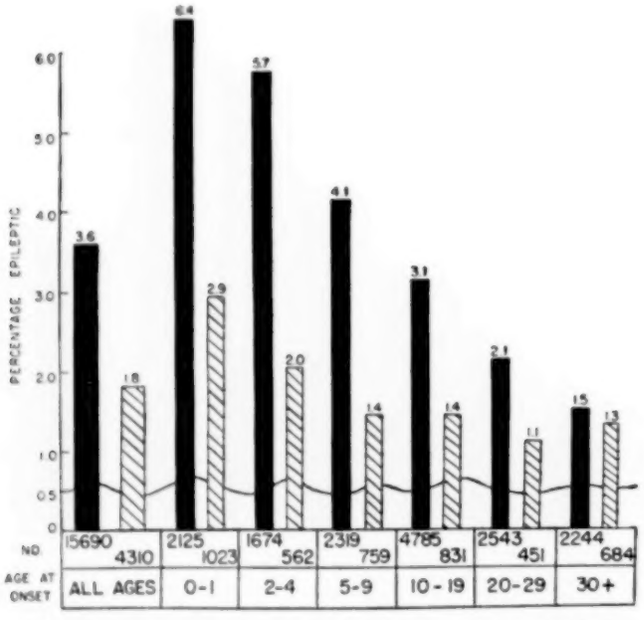

Fig. 1.—Incidence of epilepsy among 20,000 near relatives with reference to antecedent brain damage and age at onset of the seizures. The number of relatives and the age at the time of the first seizure are indicated at the bottom of the chart. The scale at the left gives the percentage of relatives who have had seizures. The solid columns represent the patients without antecedent brain damage, and the hatched columns, those with evidence of such damage. The wavy line near the bottom represents the portion of draftees (0.515 per cent) rejected because of epilepsy during the World War I. The waviness of the line suggests the possible inaccuracy of this figure.

idiopathic or cryptogenic, which sounds meaningful but says only, "I don't know." The terms "cause unassigned" seems preferable. Again, the forces of nature and nurture (or heredity and environment) are not fixed and are not mutually exclusive. Thus, the seizures of many patients will be the result of both predisposition and brain injury. Furthermore, the predisposition will be the minor factor in one patient and the major factor in another. Thus, among 2,053 patients seen in the office (three-fourths) or in the clinic (one-fourth), the proportionate representation of causes was as follows: a family history of epilepsy or migraine, 43 per cent; evidence of cerebral damage that antedated the first seizure, 27 per cent (with overlapping of these two conditions in 11 per cent) and cause as yet unassigned, 41 per cent. The present report is an effort to reduce the size of this large, unassigned (idiopathic) group.

DATA FROM FAMILY TREES

My colleagues and I have studied the family histories of 4,231 patients seen in the office or the clinic. Data for approximately one third of these were supplied by certain members of the American Neurological Association. Because the symptom of seizures is scattered widely throughout the population, every family tree, if examined twig by twig, would display one or more instances of this disorder. In addition to counting the number of affected families, we determined the number of affected persons in the population that immediately surrounded the patient—his parents, siblings and children. Even in this compact group, diagnoses are often in doubt. In these tabulations, a person subject to seizures that were not considered syncope, hysteria, carotid sinus syndrome or the result of defective metabolism was counted as epileptic without regard to precipitating conditions, such as fever, excessive use of alcohol or extreme emotion. The question whether one or two seizures are necessary for a diagnosis was compromised by accepting one seizure in one-half and two seizures in the remaining half of the total group.

Epileptic patients were divided into two groups—those with and those without evidence of a neuropathologic condition that antedated the first seizure. Of these patients, 22.9 per cent gave evidence of antecedent gross brain lesions (with or without a significant family history) and were assigned to the group having "symptomatic," or acquired, epilepsy. This left 77.1 per cent in the group without prior damage to the brain, composed of the patients with "essential" (genetic) epilepsy and the patients with unassigned cause. The results are displayed in the two left-hand bars of figure 1.

The incidence of epilepsy among all near relatives was 3.2 per cent. In the group without brain damage it with 3.6 per cent. For the group with brain damage, the incidence was 1.8 per cent. Thus, judging from the number of epileptic relatives, the genetic influence in the group with symptomatic epilepsy was one-half that present in the group with essential epilepsy.

For data regarding the incidence of a condition to have meaning, there must be comparison with the distribution of this condition throughout the general population. In the two world wars, approximately 0.5 per cent (1 in 200) of draftees were excluded because of epilepsy.[2] Persons confined to institutions and children, with their high seizure rate, were not involved—moreover, many men failed to report seizures that might be quiescent, and the screening of others was extremely coarse. These conditions would tend to depress the incidence below its true general level. The wavy line in figure 1 expresses the uncertainty regarding the accuracy of the draft values. In the group of patients with brain intact, the incidence is 7.2 times that reported in the draft. In the group with damage to the brain, it is 3.6 times as great. If the two

1. Lennox, W. G.: Gains Against Epilepsy, J. A. M. A. **120**: 449 (Oct. 10) 1942; Marriage and Children for Epileptics, Human Fertil. **10**: 97, 1945; The Genetics of Epilepsy, Am. J. Psychiat. **103**: 457, 1947.

2. Ireland, M. W.; Love, A. G., and Davenport, C. B.: Defects Found in Drafted Men: Statistical Information Compiled from the Draft Records, War Department, 1920. Causes of Rejection and Incidence of Defects: Local Board Examinations of Selective Service Registrants in Peacetime; An Analysis of Reports of Physical Examination from 21 Selected States, Bulletin 2, National Headquarters, Selective Service System, Washington, D. C., Medical Statistics, Aug. 1, 1943.

groups were mutually exclusive and epilepsy in the group with brain damage were due solely to the acquired condition, then affected relatives of this group should not exceed the number in the general population. A threefold increase simply reflects the fact that in many patients both genetic and acquired conditions are at work. The physician whose patient has onset of epilepsy after a head injury cannot say that the chances of epileptic offsprings are nil, nor can the physician who sees a family tree bedecked with epilepsy or migraine close his mind to the possibility of brain tumor.

Age at Onset.—Conditions that are predominantly genetic tend to manifest themselves early in life. If persons whose seizures started in early childhood have an unusually large number of epileptic relatives, this fact strengthens the evidence for heredity. This number should be disproportionately large also for the group without prior brain damage. The slender columns of figure 1 display the results of tabulations designed to test these points. The age at onset was taken as that at the first seizure, even if this occurred in the first months of life and recurrent attacks did not start until years later. In the group with undamaged brain, if epilepsy began in infancy, 6.4 per cent of relatives were affected, against only one-fourth that number (1.5 per cent) if epilepsy started after the age of 30. Corresponding percentages for the group with brain damage are 2.9 and 1.3 per cent, respectively. The fact that this symptomatic group shows some downward progression as the age at onset increases points again to a genetic influence at work, even in the presence of an apparently sufficient acquired cause. (The objection might be raised that the younger the patient, the greater the parental history of seizures, since parents themselves might be the informants. On the other hand, the older the patient, the more time there would be for epilepsy to have developed in siblings, and perhaps in children. Moreover, the factor of adequate information should affect the essential and the symptomatic group equally.)

EVIDENCE GAINED FROM TWINS

The statistical data already presented suffer from the uncertain mixture of genetic and acquired elements. One-egg (monozygotic, similar, identical) twins offer the great advantage that the element of heredity is the same for the two persons (the co-twins) that compose the pair. Hence, characteristics that are hereditary (such as the color of hair and eyes, the height and weight, the blood type and the electroencephalographic pattern [3]) are the same. Consequently, to the degree that seizures or the tendency to them is genetically derived, both co-twins of a one-egg pair will be epileptic or have that tendency. On the other hand, if but one has seizures and these followed some acquired lesion of the brain, the epilepsy of that person presumably is acquired. The family histories of the twins of this study support this presumption. Of the 167 near relatives of one-egg twins without evidence of brain damage prior to the onset of seizures, 6.6 per cent were epileptic, against none of the 103 relatives of the one-egg twins with evidence of a prior pathologic state.

Two studies dealing with series of epileptic twins have been published, the one by Rosanoff, Handy and Rosanoff [4] and the other by Conrad.[5] Although the series were of satisfying size, namely, 107 and 157 pairs of twins respectively, the cases apparently were gathered by means of reports from institutions, without personal examination, and, of course, the studies did not include the use of the electroencephalograph.

The series of 122 pairs of twins here reported has been collected during the past 15 years with the assistance of associates, especially Dr. and Mrs. F. A. Gibbs. Patients were encountered in clinic or in private practice, many of them through referring physicians in various sections of the country. Of the 122 sets of twins, 13 were not examined personally; of four others, only one co-twin was seen, and electroencephalograms of six pairs were not obtained. Two of the twin pairs had been reported previously by others.[6] The questions of zygosity, often a difficult one, was decided through comparison of the various physical hereditary traits, details of which appear in preceding communications.[7]

Sixty-nine pairs were judged to be derived from one ovum and 53 pairs from two ova. The difficulty of decision is often increased because one set of twins may be more nearly identical than another set, and, more important, an acquired brain injury, derived perhaps from the convulsions themselves, may alter characteristics used in judging identity, such as size, the intelligence of the person and his electroencephalogram. In young children, confusion may arise because the first seizure may have been a febrile convulsion which, though generalized, was followed by hemiparesis and later by focal convulsions.

The following case is illustrative: Bernice and Helen, now 25 years of age, each had a few convulsions at the age of 2 or 3 years—whether febrile or not is unknown. Helen has had none since; she has an intelligence quotient of 135, shows a normal electroencephalogram and has professional training. One of Bernice's babyhood convulsions was followed by hemiparesis, which cleared after several months. Focal seizures have continued to occur and now number several thousand. Her intelligence quotient is 109. Because of the seizures and destructive behavior, directed especially toward her more fortunate twin sister, she has for years been confined to a mental hospital.

Extreme ages of twins were 6 months and 42 years. The percentage of females, especially among the members who were epileptic, was unusually high. The distribution of twins with respect to zygosity, presence or absence of brain damage and chronicity of seizures is shown in the accompanying table. "Transient epilepsy" refers to patients with febrile convulsions only, or not more than two nonfebrile episodes.

3. Lennox, W. G.: The Brain Wave Pattern: An Hereditary Trait, J. Hered. **36**: 233, 1945.

4. Rosanoff, A. J.; Handy, L. M., and Rosanoff, I. A.: Etiology of Epilepsy, with Special Reference to Its Occurrence in Twins, Arch. Neurol. & Psychiat. **31**: 1165 (June) 1934.

5. Conrad, K.: Die Bedeutung der Erbanlage bei der Epilepsie, Deutsche Ztschr. Nervenh. **139**: 76, 1936.

6. Fabing, H.: Tuberous Sclerosis with Epilepsy (Epiloia) in Identical Twins, Brain **57**: 227, 1934. Freeman, W.: Symptomatic Epilepsy in One of Identical Twins, J. Neurol. & Psychopath. **15**: 210-218, 1935.

7. Lennox, W. G.; Gibbs, E. L., and Gibbs, F. A.: Inheritance of Cerebral Dysrhythmia and Epilepsy, Arch. Neurol. & Psychiat. **44**: 1155 (Dec.) 1940. Lennox, W. G.: Sixty-Six Twin Pairs Affected by Seizures, in A. Research Nerv. & Ment. Dis., Proc., Epilepsy, Williams & Wilkins Company, Baltimore, chap. 2, 1947.

CONCORDANCE OF EPILEPSY

The percentages in the last column of the table are presented in figure 2. These results with respect to concordance are in fair agreement with those of Conrad.[5] Corresponding figures, with Conrad's first, are as follows: one-egg twins: brain intact, 86 and 84 per cent; brain damaged, 12 and 17 per cent; two-egg twins: brain intact, 4 and 10 per cent; brain damaged, 0 and 8 per cent. Twins having only febrile convulsions account for the higher concordance in our two-egg series.

Inspection of these results emphasizes what clinicians have long recognized—that heredity and brain abnormality are both important. However, the present data indicate greater spread between all one-egg and all two-egg twins (52 percentage points) than between all uninjured and all injured twins (36 percentage points). This suggests that heredity may be of somewhat greater influence than brain injury in the etiology of seizures.

Cases of Discordance.—Of particular interest are those one-egg twins who have no history of acquired brain damage and yet only one of the twins is epileptic.

Distribution of Seizures Among One Hundred and Twenty-Two Twin Pairs with Reference to Zygosity and Antecedent Pathology of Twins and Chronicity of Seizures

One- or Two-Egg Twins	Antecedent Brain Pathology	No. of Twins	Both with Chronic Seizures		One with Chronic, One with Transient, Seizures		Both with Transient Seizures		One with Chronic Epilepsy, One Normal		Both Twins Affected	
			No.	%	No.	%	No.	%	No.	%	No.	%
One-egg	−	45	21	47	9	20	8	18	7	15	38	84
	+	24	1	4	3	13	0	0	20*	83	4	17
Two-egg	−	40	1	2.5	1	2.5	2	5	36*	90	4	10
	+	13	0	0	1	8	0	0	12	92	1	8
All one-egg		69	22	32	12	17	8	12	27	39	42	61
All two-egg		53	1	2	2	4	2	4	48	90	5	9
All uninjured		85	22	26	10	12	10	12	43	50	42	50
All injured		37	1	3	4	11	0	0	32	86	5	14
All twins		122	23	19	14	12	10	8	75	61	47	38

* In two pairs, one with transient seizures and one normal.

In the group of 45 one-egg twins, seven such cases were encountered (16 per cent). Thumb nail sketches of them may be given. The family and past histories were noncontributory unless stated otherwise.

Ernest and Salvatore C. are 12 years of age. In the past two years Ernest has had three convulsions without known precipitating circumstances. His electroencephalogram is normal; that of his brother is mildly slow because of the greater build-up during overventilation. Each has an intelligence quotient of 68.

Mrs. B. and Mrs. W. are 23 years of age. Mrs. B., during the past four years, has had approximately 15 convulsions, without known precipitant. A paternal grandfather and uncle had convulsions. The electroencephalogram of each co-twin is a bit fast and contains solitary spike-wave complexes, these being more abundant in Mrs. B.'s record.

Robert and Richard R. are 11½ years of age. In the past 18 months Robert has had one convulsion and three psychomotor seizures. The electroencephalogram of each twin is a bit slow. Robert's intelligence quotient exceeds Richard's by 5 points.

John and Joseph R. are 22 years of age. In the past five years John has had approximately 75 convulsions. The electroencephalograms of both are mildly slow without seizure discharges, John's being a bit the slower. John's intelligence quotient is 4 points below Joseph's.

Edward and Peter L., aged 10 years, have a father and maternal grandmother who experienced convulsions as infants. Edward has had approximately 20 convulsions in the past nine years, the first coming within an hour after a trivial fall. The electroencephalogram of each is a bit slow, the build-up with Edward being greater than that of his brother. Edward's verbal intelligence quotient is 182, being 3 points higher than Peter's. Interesting details will be reported by the patients' neurologist, Dr. William Caveness.

Joseph and James F. are 37 years of age. Joseph, during the past 19 years, has had approximately 50 grand mal and 100 psychomotor seizures. As a boy, he was knocked unconscious by a blow on the head. He has had a hysterical hemiparesis. Both co-twins are neurotic and subject to migraine. During most of the 10 years that the patient has been observed, the diagnosis has been in doubt because of the nebulous description of his symptoms. However, since confinement in a state prison, he has had a number of generalized convulsions, as well as psychotic outbursts, which are probably psychomotor seizures. The electroencephalograms of both twins were considered normal until a sleep recording of Joseph showed slow spikes in the temporal areas. His intelligence quotient, 120, was 2 points above James's.

The cases of Karen and Carol Y. are especially interesting. A maternal cousin has epilepsy. Karen, now 12 years old, began at the age of 6 to have the form of petit mal we term petit absence. Attacks recurred dozens of times daily and were recorded on the electroencephalogram. With persistent use of trimethadione (tridione®) the petit absence of Karen disappeared four years ago, and her electroencephalogram, even in sleep, is normal and free of spike and wave complexes. Carol's electroencephalogram was persistently and (for us) provokingly normal until the impetus of sleep evoked the telltale spike-wave complexes of unerupted epilepsy.

Failure of 100 per cent concordance in these one-egg twins with intact brain may find explanation in one of two ways. Four of the seven pairs of twins are 12 years of age or younger, and the normal co-twin may yet experience seizures, or the epileptic co-twin may have experienced some alteration of body or brain metabolism or some neuropathologic lesion without neurologic signs which precipitated seizures. Mystery surrounds the externalization of cerebral dysrhythmia, as in the case of Alice and Arlene D., illustrated in figure 5.

Also requiring explanation are those cases in which both members of two-egg twins have had seizures. Five of the 53 two-egg twin pairs (9 per cent) were in this category.

Robert and Barbara J. are aged 20. The mother has a history of migraine and of possible seizures in youth. Robert has had persistent convulsions and psychomotor seizures for 15 years. In the past two years Barbara has had occasional vaguely described automatisms, and her electroencephalogram displays temporal spiking.

Anthony and Patricia D., aged 7 years, had a maternal aunt who had convulsions as a child. Each twin has had two febrile convulsions, and Anthony, a few petit absences.

Joan and Phillip G., aged 2 years, have had, respectively, 15 and 16 febrile convulsions.

Pauline and Paul D., aged 3 years, have had, respectively, 10 and one febrile convulsions. The mother had febrile convulsions as a child; the father had convulsions in childhood and now has migraine.

John and Rose Marie F., 3 years of age, are the twin children of a woman who is one of identical twins, both epileptic, reported many years ago by Fabing.[6] John and Rose were both injured at birth. John had continued convulsions and was sent to an institution. Rose Marie had them only during the first week of life and has been adopted.

The incidence of 9 per cent among the co-twins is more than twice the incidence of epilepsy (3.4 per cent) among the 8,006 siblings of patients of our series. In three of the five cases, the convulsions that occurred in both co-twins were febrile. Often fugitive, these may not have as great significance as convulsions that occur without this hair trigger means of precipitation.

CONCORDANCE OF TYPES OF SEIZURES

Does heredity in epilepsy involve only the fact of having a seizure of some sort, or does it go a step further and decree what the pattern of abnormal display shall be? If specific patterns are not transmitted, then distribution of the principal seizure types—grand mal, petit mal and psychomotor—should be scattered among one-egg twins much as they are among pairs of unrelated persons of the same age. If, on the other hand, a person's constitution determines the composition of the seizure pattern, then one-egg twins whose brains have not been altered by some acquired condition should display seizures that are similar. We compared the likeness of seizure patterns in uninjured one-egg twins with the pattern in 100 pairs of patients picked at random from the files. The concordance was as follows: Of 19 one-egg twins affected with but one type, both co-twins had a history of either grand mal or petit mal in 100 per cent (random selection, 38 per cent). In pairs with a history of both grand mal and petit mal in one of the co-twins, the concordance was 70 per cent (random selection, 29 per cent). In the six pairs in which there was a history of grand mal and psychomotor seizures, the concordance was 17 per cent (random selection, 16 per cent). For all these specified seizures or combination of seizures there was concordance in 75 per cent (random selection, 31 per cent). The random sampling did not compare persons of the same age. However, the degree of concordance of types of seizures among the twins would seem to overbalance this age factor.

Concordance was noted also for the subgroups of the petit mal triad. If one co-twin experienced petite absence, myoclonic jerks or drop seizures, the other did also. In one pair, the concordance extended to coincidence. In nine of 10 episodes of falling in a faintlike, astatic seizure, the falls of both girls occurred within a minute of time—on two occasions when they were not in the same room. Of 38 one-egg twins without injury of the brain, the epilepsy of both began within a 12 month period in 22, or 58 per cent.

The conclusion that heredity has much to do with the physical phenomena of the fit is inescapable.

CONCORDANCE OF ELECTROENCEPHALOGRAPHIC PATTERNS

A further, and even more searching, question is whether concordance extends to the type of dysrhythmia. This question probes the possibility of discovering a predisposition to seizures. In their earliest report on electroencephalography, Gibbs, Davis and Lennox [8] depicted bursts of high voltage waves unattended by observable clinical phenomena. These they termed "larval" seizures. Such unseen malactivities, like a planet whose position is plotted by astronomers before it is seen, suggests that an abnormal electrical activity of the brain underlies epilepsy, and gross abnormalities in a healthy person with intact brain might represent a transmissible larval epilepsy or predisposition to seizures.

The electroencephalogram represents minutes of time, against the years of a person's past history of seizures. Hence, observation of paroxysmal phenomena on the electroencephalographic recording may depend on chance, on successive tests or on use of methods of activation, such as hyperpnea, sleep or injection of pentylenetetrazole (metrazol®). Thus, Carol Y., mentioned

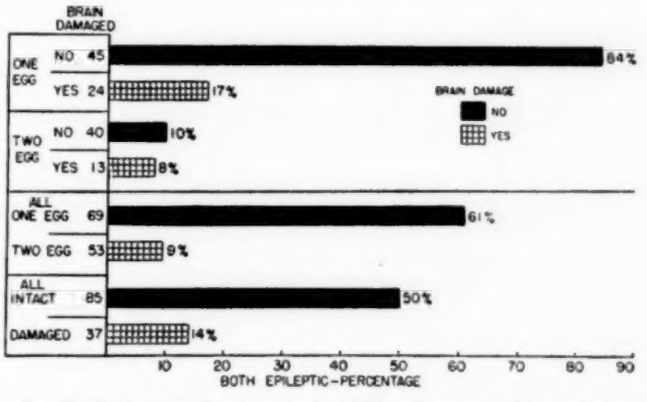

Fig. 2.—Percentage of twin pairs in which both co-twins have a history of seizures. The length of the bars represents the values expressed in the last column of figure 1. Black bars are for twins without evidence of brain damage prior to the onset of seizures, and hatched bars are for those with such evidence. Percentage figures are at the ends of the bars, and figures for the number of twin pairs are at the base.

previously, whose identical twin sister had a profusion of petit absence and of dart-dome discharges, had neither of these on routine testing until an electroencephalogram during sleep disclosed the specific dart-dome discharges.

Electroencephalograms were grouped using the classification of the Gibbses.[9] The results of this tabulation are recorded in figure 3. The tracings of some twins were normal, but in the one-egg group 61 pairs displayed some abnormality in at least one of the co-twins. A particular abnormality occurred in both co-twins in 37 (61 per cent) of the 61 one-egg pairs. The corresponding figure for the 40 two-egg twins was only 7 per cent. The agreement was greatest (74 per cent) when there was no high voltage discharge, but simply a dominant rhythm, which was either fast or slow. Among two-egg twins the corresponding concordance was 27 per cent. In the one-egg group, the concordance of the 3 per second

8. Gibbs, F. A.; Davis, H., and Lennox, W. G.: The Electroencephalogram in Epilepsy and in Conditions of Impaired Consciousness, Arch. Neurol. & Psychiat. **34**: 1133 (Dec.) 1935.

9. Gibbs, F. A.; Gibbs, E. L., and Lennox, W. G.: Electroencephalographic Classification of Epileptic Patients and Normal Control Subjects, Arch. Neurol. & Psychiat. **50**: 111 (Aug.) 1943.

spike-wave formation was 66 per cent, that of high voltage slow waves or of spikes, 37 per cent, and that of slow spike-wave complexes, 25 per cent. Of the last three types, none of the two-egg twins displayed concordance of brain wave patterns. The relatively low concordance of the slow spike-wave discharge is due to its association with acquired brain lesions. When the twins with brain damage were eliminated from the calculation, the total concordance of all electroencephalographic interpretations was 70 per cent for the one-egg and 10 per cent for the two-egg twins.

Details of the rhythmic dart-dome sequences that appear in the electroencephalographic record during a petit absence vary from patient to patient. In the recordings of identical twins, details of the dart-dome formation are much alike.

In figure 4 are compared short sections of the tracings of Constance and Kathryn McN., 11 year old girls who have had frequent daily petit absences for the past three years. In spite of the similarity of their tracings during a seizure, trimethadione [10] has been effective in controlling the seizures of only one of the girls.

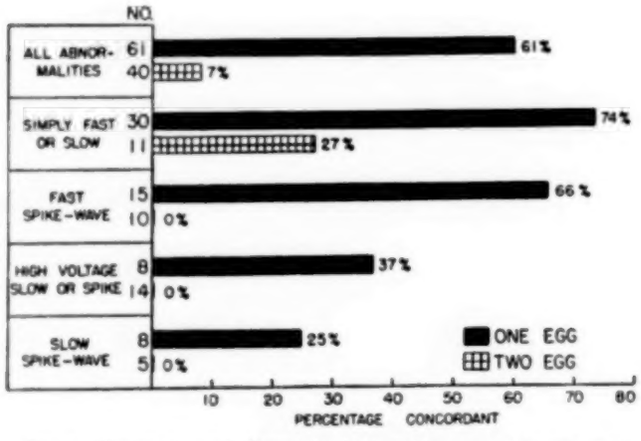

Fig. 3.—Concordance of electroencephalographic patterns in twin pairs. The solid bars represent one-egg, and the hatched bars, two-egg, twins. Percentages in which both co-twins have the same primary disturbance of the brain waves are at the end of the bars. Numbers at the base show the number of twin pairs in the group. The abscissa gives the percentage scale for concordant records. Only the outstanding abnormality is used in classification.

This striking likeness of brain wave abnormalities in persons with the same heredity adds weight to our earlier suggestion [7] that brain wave dysrhythmia might be the observable expression of the unseen, but long-talked of, anlage, or predisposition to seizures. However, the greatest concordance in identical twins and in the parents of epileptic patients is a mere alteration of background frequency. This clue becomes lost in the crowd of mere fast or slow waves of normal voltage in the general population—a 10 to 20 per cent incidence.

The following case illustrates the thinness of the line between symptomatic and asymptomatic cerebral dysrhythmia. Alice and Arlene D. are 10 years of age and are classed as one-egg twins without brain damage. During pregnancy the mother had eclampsia and experienced one convulsion just after the induced delivery of the twins. She also has a history of migraine. Alice, at the age of 3 years, received a blow on the head which rendered her unconscious for half an hour. At the age of 8, she began to have brief periods of unconsciousness. Later she had two mild convulsions. On two occasions, Alice's electroencephalographic record contained frequent discharges consisting of one or two spike-wave formations, occurring for the most part in the occipital and parietal leads but occasionally extending through all leads. She also had continuous 3 per second spike-

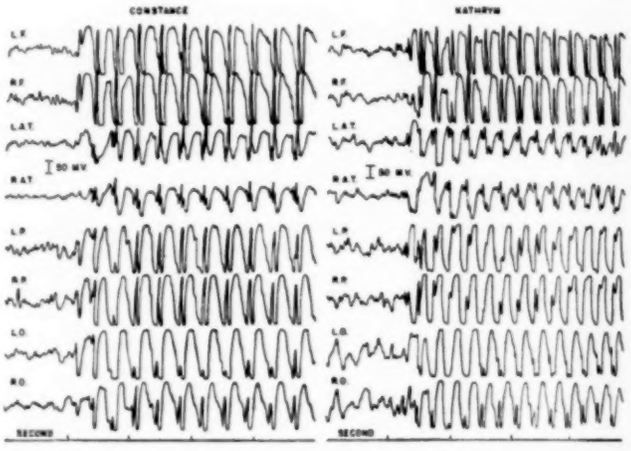

Fig. 4.—Samples of the electroencephalographic tracings of identical twins, Constance and Kathryn McN., aged 11 at the onset of a petit absence. There was no family or personal history of epilepsy. The letters at the left of the tracings indicate placement of electrodes, namely, left and right frontal, left and right anterior temporal, left and right parietal and left and right occipital leads. The signal in the middle indicates the deflection made by 50 microvolts. Time, in seconds, appears at the bottom. Reference leads were on the ears. The samples illustrate the likeness of the seizure pattern, even in some of the finer details, such as the tendency of spikes in the anterior temporal leads to surmount the waves and the relatively short spikes in the occipital leads. In the parietal leads, however, the placement of spikes is different.

wave discharges, persisting for approximately 10 seconds, during a petit absence. Seizures had never been observed in Arlene; yet her electroencephalogram contained rather more spike-wave discharges than did the record of Alice. On two occasions, when performing hypernea, she had a continuous spike-wave discharge lasting five seconds, accompanied with rhythmic blinking of the eyelids and failure to respond. Illustrative samples of the resting records appear in figure 5. Therefore, Arlene is electrically as epileptic as Alice. The division between symptomatic and asymptomatic dysrhythmia in this person was very thin, and was blown away by a few deep breaths. In Alice there was some externalizing agent which made her epileptic, possibly the blow on the head at the age of 3 years. However, the frequency of spike-wave discharges in Arlene, with the multiplicity of spikes, makes it

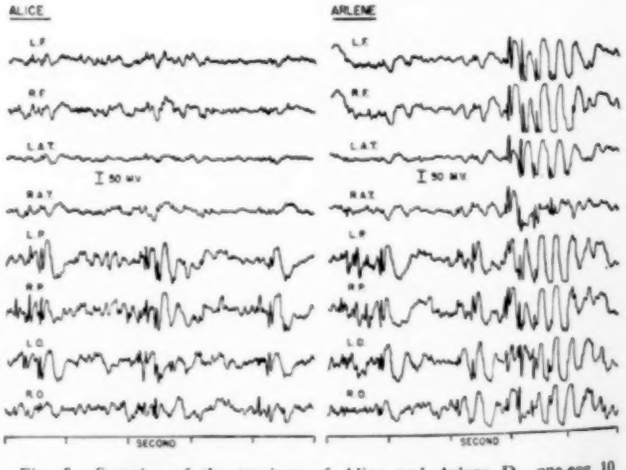

Fig. 5.—Samples of the tracings of Alice and Arlene D., one-egg 10 year old twin girls, taken in a period when free of clinically detectable petit absence. The symbols are the same as in figure 4. Alice (left hand panel) had had psychomotor equivalents daily for the past 18 months. Arlene (right hand panel) had had none except once, when performing overventilation.

10. Lennox, W. G.: The Petit Mal Epilepsies and Their Treatment with Tridione, J. A. M. A. **129**: 1069-1073 (Dec. 15) 1945.

probable that she likewise will have both petit mal and grand mal. In addition, the chance of epileptic offspring is equally great for the two girls.

In spite of the evidence that abnormal, as well as normal, patterns of electrical activity are transmitted, as shown by evidence of one-egg twins, parents of epileptic children with dysrhythmia may not show abnormalities of their electroencephalogram, or these may be of a minor nature—merely some slowness or fastness of the dominant rhythm.[1] This may be due in part to the fact that brain activity is a fluid trait and abnormalities of rhythm tend to disappear as the person grows older. This is especially true of the rhythm most characteristic of epilepsy, namely, the fast spike-wave formation. The slow form, resting on a pathologic basis, is more resistive to the healing influences of age and medicine.

HEREDITY OF MENTALITY

To the epileptic, maintenance of normal mentality is as important as control of seizures. Therefore, this matter deserves brief consideration. Twin studies have shown that the difference in the intelligence quotients of one-egg co-twins is small, much smaller than the spread between two-egg co-twins. In our own series of nonepileptic twins,[11] the average spread for 47 identical twins was 6 points and for 16 nonidentical twins, 10 points. Psychometric tests were given to 87 of the twin pairs of this study. The average spread in groups of twins was as follows:

Considering the twins without gross damage first, for the 17 one-egg twin pairs, both of whom had chronic epilepsy, the average spread was 7 points. In another group of 17 one-egg twin pairs in whom the epilepsy was chronic in one co-twin and only transient in the other, the average intelligence quotient for the severely affected twin and that for the lightly affected twin were exactly the same, 99. For 28 two-egg twins one of whom had chronic and the other transient epilepsy, the average intelligence quotient for the severely affected co-twins was 7 points lower than that for the lightly affected ones.

In contrast are those twins in whom one co-twin had at some time suffered gross damage of the brain with resulting chronic epilepsy and the other co-twin had no brain damage and only transient, or possibly no, seizures. For the 18 one-egg twin pairs, the average intelligence quotient of the brain injured with chronic epilepsy was 77, as against 104 for his relatively unaffected co-twin, a spread of 27 points. In the corresponding group of two-egg twins, numbering only seven, the average intelligence quotient of the chronic epileptic was 62, and that of his more fortunate co-twin was 93, a spread of 30 points. We may conclude that with mentality, as with convulsions, both heredity and acquired brain damage play important roles. The natural mental endowment of the patient is most important, and any gross anatomical impairment of the brain, especially if it occurs early, is of great influence. However, contrary to common medical opinion, the epileptic seizures themselves play a distinctly secondary role. This observation provides the clinician with a substantial basis for optimism when he talks with a patient (or parents of a patient) whose natural endowment is good and whose brain is not grossly damaged. A good brain can "take" a severe beating from epilepsy.

CLINICAL APPLICATIONS

A genetic factor in epilepsy is no longer in question, but only its nature and extent. As to its nature, the data from twins support the thesis that the fundamental transport is not of epilepsy per se, but of a predisposition to epilepsy. This is oftentimes demonstrable as a cerebral dysrhythmia. Possession of a predisposition to an illness is genetically the same as having that illness. As to extent, there is no reason to pillory epilepsy as a disease in which a predisposition is unduly conspicuous. As Galen remarked, "Always this is to be remembered—that no cause can be efficient without an aptitude of the body." Statistical studies which would include the use of twins would doubtless demonstrate that a transmitted "weakness," or predisposition, is greater for many common medical conditions than for epilepsy. On the basis of family histories, the hereditary factor in epilepsy appears to be approximately the same as that in diabetes, one-half that in obesity and one-eighth that in migraine, but no state has as yet forbidden migrainous persons to marry. Unjustified discrimination in this case is born of fear. The success of present day therapy of seizures should reduce both fear and discrimination.

The matter of extent applies also to individuals. Our 20,000 relatives and 122 twins told us only their total average experience. However, the patient wants of his doctor an answer to his own individual perplexity. "Can *I* get married and have children?" The child of the nonexistent Mr. and Mrs. Average would have a 30:1 chance of remaining free from seizures, whereas the chances might be 10:1 for Mr. Riley or 100:1 for Mrs. Levi, both of them real persons. Conditions that alter the chances have been stated elsewhere.[12] Briefly, those that minimize the likelihood of a epileptic child are a family history devoid of epilepsy or migraine for the spouse, as well as for the patient, and minimal abnormality of their electroencephalograms; some acquired condition that is at least partially responsible for seizures; late onset of the illness, and a normal mental endowment. Other modifying conditions may emerge as the data at hand are subjected to further analysis.

CONDITIONS THAT FAVOR MARRIAGE

As suggested at the beginning, persons are "carriers" of not one, but a great many, qualities. These transmitted traits determine, or help to determine, not only physical structure and physiological function of the body, but also the even more important characteristics of intelligence, personality and social consciousness. A person's intellectual and social assets may outweigh his physical liabilities. Hence, the physician must view the prospective parents (when one is epileptic) and ask himself, "Are the transmissible traits of mind, heart and body of such quality that reproduction is justifiable or perhaps advisable?" Some prospective parents should be discouraged; some encouraged. Unfortunately, persons who should be encouraged are the ones most alive to their social responsibilities and most likely (unless advised otherwise) to forego parenthood.

11. Lennox, W. G., and Collins, A. L.: Intelligence of Normal and Epileptic Twins, Am. J. Psychiat. **101**: 764, 1945.

12. Footnotes 1 to 11. Lennox, W. G.: Science and Seizures, New York, Harper & Brothers, 1946.

CONCLUSIONS

A history of seizures was obtained for 3.2 per cent of the 20,000 near relatives of 4,231 epileptic patients. The incidence was 3.6 per cent if evidence of brain damage prior to the patient's first seizure was lacking, and 1.8 per cent if such evidence was present. These percentages are, respectively, seven and 3.5 times the incidence of epilepsy among draftees for the United States Army.

As additional evidence of a genetic factor, in the group with undamaged brain (essential epilepsy) the incidence of epilepsy among relatives decreased progressively with a later onset of seizures (7.6 per cent if onset was in infancy; 1.5 per cent if it was after the age of 30). Corresponding incidences for the group with brain damage (symptomatic epilepsy) were 2.9 and 1.3 per cent.

The relative influences of heredity, brain damage and chronicity of seizures were studied in a group of 122 twin pairs affected with seizures. In twin pairs without prior brain damage, both co-twins were epileptic in 84 per cent of the one-egg and in 10 per cent of the two-egg twins. In pairs with brain damage, the corresponding incidences were 17 and 8 per cent.

In one-egg twins, concordance was usual not only with respect to seizures, but also with respect to the type of seizure and to the electroencephalographic pattern.

Intelligence quotients were determined for 87 twin pairs. The person's mental endowment was of most importance in the maintenance of a good intelligence. Acquired brain damage was a severe depressant; the reputed bad effect of repeated seizures was not in evidence.

A transmitted predisposition to seizures and brain damage are each (or both) important factors in the origin of a person's epilepsy. A constitutional cerebral dysrhythmia may, among other things, be the visual representation of a predisposition to seizures.

The genetic factor in epilepsy is probably no greater than in it is many other common diseases. The epileptic is unfairly pillorized in public opinion and in law. Assets that are transmissible, such as sound vital organs, good intelligence, personality and social responsibility, may outweigh the liability of a tendency to seizures. Hence, advice regarding marriage and children must be individualized.

ABSTRACT OF DISCUSSION

DR. KNOX H. FINLEY, San Francisco: This paper leaves little room for argument, for Dr. Lennox has remained conscientious to the facts uncovered by his many years of study on this problem. Throughout the paper, we recognize a constant and unprejudiced awareness of the epileptic problem from all angles. He has established that in the great majority of epileptic patients one is not dealing with the dichotomy of heredity versus environment. In the words of Dr. Stanley Cobb, in his monograph on the "Foundations of Neuropsychiatry," "The idea of 'versus' is wrong. Inborn behavior (healthy or otherwise) is there to start with; its substratum is carried by the genes, but the forces of maturation and the environment work with it to develop normal (or abnormal) behavior." Dr. Lennox' observations and conclusions not only are illuminating to the neurologist but open the door to the psychiatrist to broaden his perspective in not taking for granted or forgetting the forces of the genes or heredity, in addition to the equally important environmental influences, both physical and situational. The term "psychomotor," a term about which many of us are not happy, recognizes, nevertheless, the close relation of psychiatry to the epileptic problem. This is a further score against the dichotomy of medical neurology and psychiatry. In his comment on the concordance of types of seizures in one-egg twins, he gives the percentages of grand mal and petit mal seizures in co-twins as 70 per cent, psychomotor seizures in one co-twin occurring in only 17 per cent of one-egg twins. I should appreciate any comments he would have as to the significance of this.

DR. ROBERT B. AIRD, San Francisco: One aspect of this subject deserves some emphasis. When we speak of epilepsy as being inheritable, I believe we should define exactly what we mean. The high incidence of epilepsy and similar brain wave patterns in one-egg twins, found by Dr. Lennox, strongly suggests that the type of cerebral tissue and its pattern of functioning (that is, its physiology and biochemistry) are inheritable characteristics. This means that if one of a pair of one-egg twins has shown a susceptibility to convulsions, there is an excellent likelihood that the other possesses a similar tendency. Without intention of contradicting Dr. Lennox' findings, I believe we should stress that it is the type of tissue and its unstable pattern of functioning that is inheritable. One inherits, not spells themselves, but, rather, a susceptibility to them, as determined by the lack of physiological and biochemical homeostasis of the inherited cerebral tissue. The importance of this distinction lies in our attitude toward convulsive disorders and our approach to their therapy. We should not draw the conclusion, from Dr. Lennox' report, that epilepsy is inheritable, and let it go at that. When Dr. Lennox states that an abnormal electrical activity of the brain underlies epilepsy, or that epilepsy is a paroxysmal cerebral dysrhythmia, one might be so tempted. The point I am trying to make is that epilepsy is, fundamentally, a physiological and biochemical phenomenon and that the associated brain wave patterns and clinical spells are merely manifestations of the underlying abnormality. There is a tendency, in speaking of epilepsy as inheritable, to think of the physiology and biochemistry of the brain as fixed, and to forget such mechanisms as the patient's water and acid-base balances in the practical therapy of convulsive disorders. Given a susceptible background, convulsions may be induced by many acquired and variable factors, such as cerebral damage and certain shifts of physiologic and biochemical factors. Since such factors explain why patients have spells at one time and not another, and since they can be controlled in some measure, it is of considerable importance that we set about to regulate them. Let us not say, therefore, that epilepsy is inheritable but, rather, emphasize that the type of cerebral tissue, with its instability of functioning, is the characteristic which is inherited.

DR. WILLIAM G. LENNOX, Boston: Dr. Finley's question about psychomotor seizures is, I believe, readily answered. Not only psychomotor seizures, but the slow spike-wave formation, which is found so often in children, carries a low concordance incidence; i.e., occurrence in both co-twins is relatively infrequent. This may be explained by the fact that both psychomotor seizures and the slow spike-wave electroencephalogram are usually based on some antecedent brain damage. A related question is this: If a hereditary factor is important, why do only 84 per cent of identical co-twins without evidence of brain damage have epilepsy? Probably there are many acquired abnormalities of the brain which one cannot recognize clinically. The brain pathology in this series refers only to gross damage, extensive enough to be demonstrable by the clinical history of brain damage or of focal seizures or by the pneumoencephalogram or the electroencephalogram.

In answer to Dr. Aird: Ordinarily there is agreement between the neurological evidence of localized brain injury and the electroencephalographic pattern. I am sure, however, that we do not have as close an agreement as Dr. Aird, because we have not been as meticulous as he is in carrying out localization studies. I agree with Dr. Aird that it is important to search for acquired factors and that even the brain wave pattern is not the final answer to the origin of seizures. The hereditary characteristic is represented by a gene, which is probably a large protein molecule; so if we are to pursue this elusive problem of the origin of epilepsy into its ultimate lair, we must go even beyond the neurophysiological mechanism of brain cells and demonstrate these protein molecules, and for complete eradication of genetic epilepsy, we must beneficially modify their configuration.

DIAGNOSTIC DRIFTS, DECEPTIONS AND COMMON MISSES

M. Pinson Neal, M.D., Columbia, Mo.

When a patient presents himself to one of you as his physician, a mystery is faced. You accept this fact and attempt to unravel the mystery. No one can boast the ability to set out alone, make correct diagnoses and fathom the nature of all diseases, any more than one can chart the course of a given disease or make of an individual case an average case.

Effective treatment is the aim of all medical practice. Early and accurate diagnosis is imperative if treatment is to be effective. It is the general practitioner to whom the average patient first appeals for help; therefore, the former bears singular responsibility. Many diseases are self-limited; some that otherwise carry a high mortality rate are curable when promptly recognized and adequately treated. To treat diseases without a diagnosis and without a knowledge of their behavior may be no more effective than trying to warm one's feet by moonlight.

Sometimes it is as important to know what kind of patient has the disease as to know what kind of disease has the patient. For the general practitioner of the early part of this century there were 24 hours in each day—he had time, or at least took time, to listen to the patient's and the family story. He usually knew of the feuds and fights in advance and took that information into account. He was not concerned with noonday luncheon clubs, golf courses, automobile races, fishing rodeos, the many present day medical and hospital staff meetings to be attended, and Wednesday and Saturday afternoons and Sundays off, and he was not pestered with fund drives for every imaginable thing except a retirement fund for broken down men of medicine. To him duty implied service—and serve he did! He brought to the sickroom an air of cheerfulness, confidence and optimism, though his treatment was sometimes founded on tragic errors of diagnosis. Too often today, however, physicians on the first visit start many patients on one of the antibiotic or so-called miracle drugs without seriously attempting a diagnosis.

The indiscriminate use of the "wonder" or "miracle" drugs without first determining the nature and cause of the disease is making a lost art of diagnosis. Changes in clinical picture and modification of signs mask or conceal symptoms and in some instances are the cause for depriving the patient of needed specific therapeutic agents. Truly, diagnosis should be a prerequisite for treatment, and patients, not their microbes, should be considered and treated. In the treatment of many infectious diseases there are bacteriostatic, virostatic or rickettsiastatic agents that may retard or repress the growth of infectious agents, but the body must still develop and exert its own defenses as antitoxic, immune body and cellular reactions. In many diseases immunity needs to be developed or borrowed immune products employed.

The treatment of the damages caused by microparasites, is a special task that requires medical ingenuity, experience, skill and individual attention. The physician is still faced with this problem even though the "miracle" drugs may have made possible the control of pathogenic micro-organisms. In chronic brucellosis this is very evident. In diphtheria, botulism and tetanus, antitoxic substances are still necessary to combat the soluble products having toxic action. Most diseases are relatively simple to restrain and cure in their early stages but become increasingly difficult to manage with each day of neglect or improper treatment. Too often a physician is called or starts diagnostic investigation after what began as a small snowball has rolled downhill to become an avalanche.

Is there too much diagnostic emphasis placed on information obtained from the many laboratory tests? There can be no substitute for a carefully taken and weighed history, with examination and observation of the patient by competent clinicians. Without this information, intelligent use of the laboratory as a diagnostic aid is not possible. Tests, no matter how well done, will not do the thinking for the clinician. Laboratory tests and roentgenologic observations are important in confirming and, in many instances, in establishing diagnosis; however, they are not always employed with judgment. Such a diagnostic approach, neglecting or misinterpreting history and physical findings, reveals lack of understanding by the physician and may be conducive to mischief, loss of valuable time and unnecessary cost. Be you reminded, however, that "he who practices medicine without the aid of a laboratory belongs to a past generation of physicians."

The subject under discussion is one with which I am familiar through years of experience as a consultant and active pathologist. In considering the deceptions and common misses as problems in diagnosis, I have given thought to means whereby those of the past could have been prevented and repetition in future cases avoided.[1]

PYREXIA

Body temperatures are commonly elevated as a more or less physiological process. Such elevations occur in metabolic diseases, such as acidosis and eclampsia, in conditions involving tissue necrosis, such as infarctions and the disintegration of blood clots, and in the infectious diseases in general. It is not uncommon for patients in the terminal stage of a fatal illness or for those severely ill with an infectious disease, especially the aged with pneumonia, to have normal or subnormal temperatures as evidence of little or no resistance. Certainly, it is true that failure for fever to develop in response to a severe infection calls for a grave prognosis. Unexplained fever is a frequent cause for extensive studies and anxiety on the part of the physician and patient. Among conditions where this is an occurrence are malignant diseases, especially Hodgkin's disease with its rather characteristic Pel-Ebstein, or Murchison-Sanderson, type of fever, toxic goiter, tuberculosis, syphilis, undulant fever, thrombosis-embolism-infarction phenomena and nervous exhaustion.

Professor of Pathology, University of Missouri School of Medicine.

Read before the Joint Meeting of the Section on General Practice and the Section on Pediatrics, at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 30, 1950.

1. Neal, M. P.: Diagnoses Commonly Missed in General Practice, South. M. J. **40**: 414-420, 1947.

MALIGNANT DISEASES

Malignant neoplastic diseases, including the leukemias and Hodgkin's disease, frequently give rise to obscure and prolonged fever. Numbers of autopsies have been performed upon victims of undiagnosed malignant diseases who had a history of prolonged fever of undetermined origin. The accompanying manifestations of anemia, loss of appetite, loss in body weight, fatigue, insomnia, the localizing hemorrhage from some tissue or body cavity, the painless jaundice, the retention of secretions or excretions, the evidence of local obstructions, such as difficulty in swallowing, and constipation, call for investigation and explanation. Biopsy of an available lesion or of a regional or sentinel lymph node and roentgenologic examination, particularly with use of opaque substances for the demonstration of abnormal openings and communications, displacements, stenoses, filling defects and other abnormal features, should make for ready diagnosis of the solid tumors. The diagnostic blood findings or, when in the aleukemia phase, bone marrow films, make the diagnosis of leukemia easy.

UNDULANT FEVER (BRUCELLOSIS)

Brucellosis, an important disease of a specific bacteriological type, is accompanied with many complaints of chronic or recurrent nature. Masquerading under many forms and symptoms, it can be diagnosed without reasonable doubt only on isolation by culture of the causative organism from the patient in the acute stage of the disease. A relative or presumptive diagnosis is commonly and properly made on a combination of repeated blood agglutination reactions showing a rising titer, and skin and opsonocytophagic tests. The diagnosis of Brucella infection or undulant fever on the basis of only one of these or, even worse, on the "therapeutic test" is not reliable. A skin test does not distinguish past infection from present active infection. The complacency of those who rely upon it is deprecated, for, all too often, it is misleading. If it shows a rising titer, the agglutination test is good presumptive evidence in acute cases, but some strains of the organisms are not agglutinated even by the serum of the patient from whom the strain was isolated. The agglutination test is positive more frequently in acute than in chronic cases of brucellosis, but complete agreement is absent concerning the agglutination titer level at which significance, or positivity, begins and from below which one would interpret a negative reaction. A "positive agglutination" may follow one or more skin tests from which the antigen has sensitized the individual. The recognition of chronic brucellosis is as difficult as would be the diagnosis of syphilis without the Wassermann or other serologic tests. Many patients whose condition has been diagnosed as chronic brucellosis have eventually been found to be free of that disease and to have or show evidence of having been suffering from a malignant growth, leukemia, Hodgkin's disease, toxic goiter, hypothyroidism, tuberculosis, syphilis or nervous exhaustion.

DISEASES OF THE THYROID

Hypothyroidism.—This condition, commonly encountered in obese, myxedematous and cretin types of persons as a major manifestation, is easily recognized, but when encountered in lower degrees, it is commonly missed. To this larger group belongs the hypothyroid person with sensitivity to cold, prematurely wrinkled dry skin, constipation, nervousness, vertigo, often a puffy face, and, generally, with a mental lassitude, particularly seen in the schoolrooms in "flunkers" or "repeaters." The subnormal basal metabolic rate, the most significant criterion in diagnosing the condition, evidences the metabolic disturbance that is responsible for most of the subjective findings. The administration of a potent thyroid preparation is most striking in its reward, bringing about the change of a follower to a leader, a dullard to a scholar, and a person of the vegetative type—indolent, indifferent, inactive, languorous, mentally and physically sluggish—into an active, ambitious, alert, energetic person possessing mischievous potentialities.

Toxic Goiter.—A toxic goiter can and should be recognized in a patient from the general symptoms, signs and history, the diagnosis being confirmed by the basal metabolism test. The patient, however, may have a history of low grade fever persisting for months and of going from one doctor or clinic to another. It is to be emphasized that a basal metabolic rate above normal may be the result of conditions other than hyperthyroidism and is a measure only of a metabolic disturbance and not of the mischief a goiter is doing.

SYPHILIS

Frequently syphilis, this "great imitator," a universal disease of man, in spite of all efforts at its control still escapes the dragnet of diagnostic procedures. One of the sundry manifestations is prolonged fever. Positive or negative serologic tests are not conclusive for or against the diagnosis of this disease. Symptoms, signs and history must be given full consideration. When there is reason for question after considering all these factors, spinal fluid examination should be made, including cell count, globulin determination, colloidal gold test and a serologic test, preferably the Wassermann.

Inadequate attention has been given the patient in whom the only indication of syphilis is a positive serologic test. The diagnosis of syphilis is particularly important in those states having a premarital blood test law to the exclusion of other methods of recognizing syphilis. The serologic tests miss the patient with syphilis in its most infectious period, the chancre stage, and yield positive findings to the highest degree in the later stage of the disease, when the patient is really harmful only to himself.

A number of conditions are now recognized as yielding false positive serologic reactions for syphilis: those caused by respiratory, infectious and febrile diseases, especially malaria and infectious mononucleosis, and those following immunization, significantly against tetanus and smallpox. In these conditions a clinical history, properly interpreted, a spinal fluid examination and repeated serologic tests will bring clarification. The repeated tests of serums will on quantitative determinations show a titer remaining at a constant level or possibly increasing in syphilis; whereas, in those serums giving the "biologic false positive reactions" the titer usually decreases or, in a majority of cases, gives a frank negative reaction within three months after subsidence of the responsible factor. In patients with these false positive reactions there are no false spinal fluid reactions.

VASCULAR ACCIDENTS

Thrombosis and Embolism.—The protective mechanism of blood coagulation as a physiological process may be harmful or even fatal, as in thrombosis, embolism and infarction phenomena. To the physician these phenomena remain the one great hazard to surgery as tragic complications to trauma, pelvic inflammations, vascular damage and pregnancy in the postpartum period. To the public they constitute one of the "acts of God" in the form of a visitation by the "Grim Reaper," taking the life of a patient who is in convalescence from one of the named conditions. Sudden death may occur dramatically in the patient in whom a fracture is progressing properly, in the postpartum patient when all is well and in the postsurgical patient who is ready for dismissal. Unexplained fever, anxiety and restlessness of the patient many times give warning prior to the development of dyspnea, cyanosis and shock as evidence of pulmonary embolism. Dislodgement of thrombi formed in some portion of the venous system and carried as an embolus or emboli to the right side of the heart and from there to the pulmonary arteries most often follows gastric and pelvic operations. Fatality usually occurs between the sixth and eleventh days following trauma, surgery or delivery. Life terminates as suddenly as the automobile motor stops from a gas line "vapor lock." Almost all of those who succumb to this condition do so within less than one hour of the first manifestation, and fully one half of them die within less than five minutes. Medical literature reveals that pulmonary embolism is responsible for 80 of every 1,000 postoperative deaths, for two deaths in every 1,000 operations and for one death in every 1,000 patients receiving hospital care.

The pulmonary symptoms of embolism are often unfortunately the earliest recognized manifestation of an unsuspected thrombus somewhere in the venous system. Thrombi are most likely to occur where there is venous stagnation, as in patients who because of the nature of their illness must be kept immobile, are obese and have known cardiac deficiencies and "poor circulation."

Myocardial (Cardiac) Infarctions.—Cardiac infarction has changed from a rather rare to a common disease. During the 10 year period ending in 1949, the number of cases of coronary thrombosis treated in the University of Missouri Hospitals was exactly twice the number that had been seen in the previous 10 year period. Prior to and during the first year of World War II from 20 to 25 patients a year were admitted to one Swedish hospital with coronary thrombosis with infarction of the heart. In 1948 there were 136 such cases, and the 25 among them ending fatally were verified by postmortem findings.[2] The high price paid for overwork, anxiety, worry and the great use of tobacco, as seen particularly in the medical profession with its death rate from coronary disease, is alarming. Not all patients exhibit the severe and classical diagnostic manifestations. Some of them escape diagnosis and suffer cardiac rupture or severe dilatation under exertion or during excitement. The patient unknowingly abuses his heart and shortens life because the primary lesion was unrecognized and he was not warned. Too frequently coronary arterial disease is diagnosed at the autopsy table.

Patients suffering this catastrophe need early diagnosis, for treatment centers predominantly on protection from further damage. The electrocardiogram in most cases shows changes which are diagnostic. The test should be repeated in the patient when it at first fails to show myocardial damage. A negative electrocardiogram in no sense indicates an undamaged myocardium. It is a valuable additional and supportive finding—not a final test. When there is absorption from an established area of myocardial necrosis, the blood sedimentation rate becomes more rapid than normal and so persists, even after the fever, the leucocytosis and neutrophilia have disappeared. This test is of significant value in differentiating myocardial infarctions from angina pectoris, in which it is unaltered.

ANEMIA

It has become a modern fad to have anemia, and for some physicians to make such a diagnosis and prescribe iron, transfusions, folic acid, vitamin B_{12}, liver or liver and gastric extract preparations, without the benefit of blood studies and other examinations that may be required to classify the anemia, if, indeed, it is present, and to determine such therapeutic need. The general practice of administering the specific anti-pernicious-anemia elements to patients in whom the condition has not been diagnosed as well as to those with the common anemias of iron or other deficiency, such as that following blood loss or produced by parasitic or bacterial infections, toxic, drug or chemical action, is illogical, wasteful of scarce agents, expensive and useless. The majority of patients suffering from anemia require iron replacement therapy, and, if the anemia is severe, transfusions of blood. In others the condition is soon corrected if the factor or factors of causation are removed.

NUTRITIONAL DEFICIENCIES

The nutritional deficiencies are many and vary as to cause, type, degree, tissues involved, manifestations, lesions and in requirement for therapy. One should ever be conscious of the fact that nutrition is to some degree involved in most diseases. A high percentage of the cases seen and treated in adulthood are the result of chronic alcoholism, for alcohol does not contain the vital food elements that it replaces. Nutritional disturbances may be the cause of anemia, delayed healing of surgical or traumatic wounds, prolonged convalescence, sterility, miscarriage, rickets, faulty bone and tooth development, osteomalacia, edema, neurological manifestations, digestive disturbances, and other conditions. The cause as well as the nature of these conditions must of necessity be determined before initiating treatment and applying corrective measures to prevent repetition.

Malnutrition can exist on "three square meals daily." Much of the thought expended on sex education, anti-alcohol and cancer control campaigns could with profit be expended on this problem. The cancer control program, laudable as it is, affects largely those of 50 or more years. Programs to make healthier men and women from the school children who still have 50 or more years of life expectancy should also have much attention and support. Experts estimate that millions of Americans are

2. Malmros, H., cited in Infarction of the Heart, Foreign Letters, J. A. M. A. **142**: 275 (Jan. 28) 1950.

living—or worse, many are dying—on inadequate diets. Too many, particularly those of school age, reach for a candy bar, when they need a vitamin rich, wholesome apple or orange. In health-building programs there has been neglect in utilizing teachers who live in almost daily contact with millions of school children. Through these, education in health matters can be carried to their charges, and demonstrations are possible by frequent measurements and progress records for those having mental curiosity or interest. Nervous instability is becoming our national disease. Poor diet may be one of the chief causes of this condition.

The child with a digestive disorder or an acute nutritional upset manifested by acidosis, nausea, vomiting, fever and abdominal pain may be given a diagnosis of appendicitis and be operated on, with resulting chagrin to consultant and surgeon who ignored the acetone-loaded urine, or failed to have a urinalysis done. In those cases the leucocyte count, which fails to show an elevated or rising neutrophil percentage, rules out infection.

Among industrial workers and outdoor men subject to heavy sweating and loss of sodium chloride, deficiency of this chemical may cause a serious metabolic disturbance bringing on myalgia or heat cramps, particularly of abdominal muscles, and may be mistaken for "an acute abdomen." A history usually suffices for diagnosis; if not, a simple chemical determination will reveal the deficiency which can be easily corrected.

INTERNAL PARASITES

Stoll[3] has estimated 44,900,000 human helminthic infestations in our population of about 144,000,000, or a population infection of 31 per cent. He terms trichinosis, oxyuriasis and uncinariasis as of special importance in this country. In routine examinations, urinalyses reveal diabetes mellitus in about 0.4 per cent, serologic tests for the diagnosis of syphilis yield about 2 per cent positive reactions and blood counts show a blood dyscrasia in a small fraction of 1 per cent. Internal parasites are ignored many times and commonly missed. In some locations physicians are ever conscious of the possibility of malaria, hookworm, Ascaris, Oxyurias and amebic infections. It would be most interesting to know what your individual answers would be to the question, "How many examinations for internal parasites or their ova were requested by me last year?" Trichinosis is to be considered especially in the patient who has typhoid-like symptoms, with a negative blood culture and a negative Widal reaction. Malaria is often missed because the patient had been taking an antimalarial drug in amounts sufficient to reduce the numbers of parasites in the circulating blood, making their finding difficult or impossible. Amebiasis is usually missed by the employment of an unsatisfactory technique.

NERVOUS EXHAUSTION

Emotional and neurotic disturbances, psychoneuroses, functional nervous disorders, neurasthenia and constitutional inadequancy are acceptable as expressions of a condition, if not as diagnostic terms. These constitute not pathological entities but psychological elements, which the general practitioner finds are as hard to interpret and, often, just as important as are the physiological and anatomical factors. Within the last three decades nervous exhaustion has become a fairly common condition, yet many times it is missed, or the symptom complex is misinterpreted. An ever increasing number of individuals who are physically and possibly mentally exhausted and living in anxiety states have prolonged, unexplained fever and other symptoms without demonstrable organic basis. For some, our modern way of living is just too unsettled and strenuous. In these patients, rest, relaxation, relief from responsibilities and anxieties, change of environment and a regulated schedule of work and play with a balanced diet work magic. It frequently becomes necessary that such a patient be told, "Your symptoms are real enough, but they are not being produced in an organ that a surgeon can remove and they are not amenable to any drug or chemical agent." The Chinese writer Lin Yutang has been credited with saying, "American worship of hard work is a national cross on which men crucify themselves," and yet the great English philosopher and bishop Richard Cumberland proclaimed, "It is better to wear out than to rust out."

SUMMARY

A plea for definite and early diagnosis as a prerequisite for prompt and applicable therapy is made.

ABSTRACT OF DISCUSSION

DR. OSCAR B. HUNTER, Washington, D. C.: To the pathologist it is sometimes disconcerting to find that physical examination, careful history of case and mental concept vary from the clinical examination, which has not been made by the clinician. He must allow the intern or resident or someone else to do it, or the laboratory tests are taken at their entire face value. I have always told my students, "No matter whether your test comes out this way or that, if you disagree with your clinical findings, take the clinical findings and check your laboratory test." It is also distressing to see tests of all kinds on the patient ordered without reference to the clinical manifestations. That is not good practice. We would much prefer to work directly under the physician or the pediatrician, and prove or disprove a patient to be suffering from the condition which he suspects. I would like to hear Dr. Neal say a word about the newer tests for malignant conditions, particularly from the serologic standpoint. Many such tests have proved unsatisfactory. Syphilis is always with us and offers a difficult problem of diagnosis. At least 42 other conditions may be confused with syphilis. Treatment should not be based only on a positive Wassermann test, but on the clinical manifestations plus any assistance that can be given by the Wassermann test. It is unfortunate that an individual is labeled syphilitic when he has no syphilitic manifestations other than a positive serologic reaction. I think we have a much better understanding, particularly in the postoperative cases, of the development of phlebothrombosis or thrombophlebitis in the leg, with the attendant difficulties in the lungs with formation of massive or minute emboli or infarcts. Lead poisoning could be discussed at length. A machinist working in a Navy yard was dismantling an old ship and burning off paint with a blow torch. Pain developed, and he was about to be operated on for appendicitis, when the blood count showed he had a large amount of basophils in his blood. The diagnosis of lead poisoning was made and the man's life saved. Dr. Neal has called attention to many important matters that need to be reviewed, and we trust that our misses will become fewer.

DR. J. B. BILDERBACK, Portland, Oregon: At times, it is difficult to determine the cause of fever in a child. Frequently one will do the most careful physical examination and have the

3. Stoll, N. R., in Karsner, H. T.; Lund, H. Z., and Sanford, A. H.: The 1947 Year Book of Pathology and Clinical Pathology, Chicago, The Year Book Publishers, Inc., 1948, pp. 512-518.

support of a good laboratory, and nevertheless be unable to determine what is causing the fever. It often takes all one's training and patience to make the right early diagnosis of acute abdominal pain in young children, particularly in beginning appendicitis or intussusception. Examination of a child with unexplained fever is not complete unless one or several examinations of urine are made. Malformations of the urinary tract are rather common in children, as autopsies reveal an occurrence of 5 to 12 per cent malformation. The crux of Dr. Neal's paper is that one should make the diagnosis early and be sure what is wrong before treatment is started. Ideally, that is true, but it is sometimes very difficult, particularly in cases where you might have beginning meningitis and do not know the type. In meningitis, especially, every hour counts, because your results depend largely on how soon treatment is started. We have witnessed one of the most wonderful decades in therapeutics. The sulfonamides and the antibiotics have followed each other so closely that we are hardly used to one before we have another. And now we have the antihistamines, ACTH (pituitary adrenocorticotropic hormone), cortisone and their new cousins. Let us all hope now that the test of time will prove their worth.

DR. M. PINSON NEAL, Columbia, Mo.: As far as the newer procedures in the diagnosis for malignant growths are concerned, as a morphologic pathologist I believe in the biopsy, the histologic section properly interpreted being the one conclusive means of arriving at a true diagnosis. None of the chemical tests are accepted as diagnostic in a given case. Exfoliative cytological diagnosis has its place in a screening program, but it is not depended on by even its strongest adherents as a final criterion in an individual case, at least for radical surgery. Dr. Bilderback mentioned starting treatment without having an established diagnosis. The trouble with this is that most of the modern drugs and agents modify symptoms, and therefore one loses the guiding light that points the way and the crutch that helps carry one to certainty. The use of one of the "miracle" drugs as a therapeutic agent without an established diagnosis of the disease is a too common trend or drift. The acceptance of reports on some laboratory procedures as diagnostic, when false positive reactions are common and are not duly considered, constitutes deception. Failure to obtain an adequate clinical history and to employ definite diagnostic procedures may be responsible for numbers of diagnostic misses.

RINGWORM OF HANDS AND FEET

HISTORICAL REVIEW

James Herbert Mitchell, M.D., Chicago

In my paper entitled "Ringworm of Hands and Feet," which was read before the annual meeting of the American Medical Association in June, 1916, at Detroit, and which was published in THE JOURNAL, I stated as follows[1]:

Tilbury Fox was probably the first observer to report a recognized case of trichophyton infection of a volar surface. The diagnosis in his case was simplified by the fact that the lesion began on the dorsal surface of the hand as a typical ringworm, and gradually progressed until it involved the interdigital and palmar surfaces of the fingers. In 1888, Pellizari reported the occurrence of seven cases of infection of the palms and soles in a series of 150 cases of trichophytosis capitis. The first careful and systematic study, however, was not made until 1892. In January of that year, Djelaleddin Moukhtar, working in Fournier's clinic, presented two cases before the Societe de dermatologie. They were of the eczematoid dyshidrotic type, with abundant mycelial threads, and excited much interest and discussion by the societe. During that year, four more papers by the same writer appeared. In the last of these he collected reports of twenty-five cases, seventeen of which were personal observations.

In 1908, Whitfield described five cases of ringworm of the hands and feet "indistinguishable from an ordinary outbreak of acute vesicobullous eczema." In 1910, Sabouraud reported six cases of intertriginous eczema of the feet, four of which gave cultures of Epidermophyton inguinale, and one case with lesions on the hand. In February, 1911, Whitfield recorded observations in seven additional cases. In November, 1911, Sabouraud presented his observations on the subject at a special meeting of the Dermatological Section of the Royal Society of Medicine. The discussion was opened by Whitfield with a paper in which he classified the clinical types and reported fifteen additional cases. In the general discussion which followed, most of the members present told of having encountered the disorder among their private patients.

Since 1911, the most comprehensive paper on the subject is that of Kaufmann-Wolff. She made a clinical, histologic and mycologic study of twenty-five cases which formerly would have been accepted as dyshidrosis. In America, Montgomery and Culver reported an infection of the feet, following eczema marginatum of the groin, from which Epidermophyton inguinale was grown. In 1915, Hartzell reported four cases which he had seen "in the past few years."

In 1916, Lane reported two cases, both of which were in women. One patient had lesions on the plantar surface of the foot, and the other had lesions involving the nails and both dorsal and palmar surfaces of the fingers.

Prior to the publication of the papers by Hartzell and by Lane, the condition had gone practically unrecognized in the United States. After the publication of my paper in 1916, interest in the subject was aroused and there came a rapid acceleration in the number of papers appearing in the medical press until to date there is now a bibliography approaching 300 full length papers.

At the present time, papers on ringworm of the hands and feet are about as frequent as talks on "Low Back Pain," "The Acute Abdomen," and "Some Common Skin Diseases Seen in General Practice." I am unable to estimate the number of times my lantern slides of fungous diseases have been lent to speakers who were qualified to discuss the subject but who had failed to provide themselves with the necessary slides.

In the original paper in 1916, a careful study of 65 cases was reported, and photographs of the various manifestations of ringworm of the hands and feet were presented. A careful reading of that paper leads me to say that no statement made therein calls for retraction to date.

At the annual meeting of the American Dermatological Association in 1921, I read a paper entitled "Further Studies on Ringworm of the Hands and Feet."[2] The differential diagnosis, the methods of culture of the organisms, and the types of organisms found were set forth. In that paper, the whiskey flask was described as being very useful by way of providing large surfaces for giant cultures without the necessity of making subcultures.

Distinguished Lecture in Dermatology, read before the Section on Dermatology at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 29, 1950.

1. Ormsby, O. S., and Mitchell, J. H.: Ringworm of Hands and Feet, J. A. M. A. **67**: 711 (Sept. 2) 1916.
2. Mitchell, J. H.: Further Studies on Ringworm of Hands and Feet, Arch. Dermat. & Syph. **5**: 174 (Feb.) 1922.

At the annual meeting of the American Dermatological Association in 1922, I read a paper on "Erosio Interdigitalis Blastomycetica." This condition was first described by Gougerot and Goncea in 1915, and later by Fabry in 1917, but my case was apparently the first to be reported in this country. It was seen Aug. 10, 1921, and was presented at the January meeting of the Chicago Dermatological Society in 1922. The condition is due to Monilia (Candida) infection and is usually found in the third interspace of the fingers. The first cases seen were limited to obese, orthodox, Jewish women. Further studies showed that Monilia infections are essentially intertriginous.

In a paper entitled "Amycotic Dermatoses Simulating Ringworm and Erosio Interdigitalis Blastomycetica," read before the annual meeting of the American Dermatological Association in 1928, I stated[3]:

> My purpose in this paper is to call attention to a series of cases in which lesions were presented that simulated ringworm infection and erosio interdigitalis blastomycetica, but in which a fungus could not be found. Some of the lesions may not be acknowledged by experienced clinicians as even resembling ringworm, whereas other lesions of this group will probably call forth emphatic insistence that they are ringworm, and that I have failed to demonstrate the organism. My answer to such insistence is that I have no proof to offer other than negative mycotic results.

Quoting further, I said:

> Bacteria as the causative agents of dyshidrotic eruptions seem to have attracted little attention. Rajka, however, is convinced that staphylococci and streptococci may produce such eruptions, and he described in detail a group of six cases. In his series, the dyshidrosiform, symmetrical eruption was usually preceded by an impetiginous lesion. The vesicles, which were sterile at first, became infected in the course of from one to three days and contained pus cells. He was unable to determine the pathogenesis of the symmetrical outbreak. The condition might be allergic, he thought, or a hematogenous dissemination either of the organisms or of their toxins. Rajka concluded that there are three forms of dyshidrosis: mycotic, microbic and nonparasitic. He stated the belief, however, that further study might lead to the placing of many of the cases of the third group into one or the other of the first two groups.
>
> In general, the nonmycotic lesion in the group of cases that I am calling attention to does not resemble dyshidrosis. The lesion is more superficial than ringworm, and is not characterized by a deep-seated vesicle as is the mycotic infection. The lesion usually has a well-defined advancing border, but the individual element is a minute, yellow, serous plug rather than a deep-seated vesicle. There is less variation in the components of the lesion than in ringworm. The coexistence of pustular lesions elsewhere on the body is a fairly constant feature of all of this group of cases.

Continuation of studies on bacteria as a possible cause of lesions on the hands and feet simulating mycotic infections resulted in the presentation of a paper before the Section on Dermatology at the annual meeting in Cleveland in 1934. In the summary of this paper, I stated[4]:

> There is a marked tendency to regard all acrodermatoses as ringworm of the extremities.
>
> There is a need for careful laboratory examination of all dermatoses of the hands and feet before arriving at a diagnosis.
>
> I agree with Sabouraud, MacLeod, Walker and Roxburgh that impetigo (Tilbury Fox) is due to the streptococcus; this fact can be proved with ease.
>
> A group of five cases of streptococcic infections (impetigo) of the extremities simulated mycotic infection sufficiently to lead to errors in diagnosis.
>
> The infections were found to yield within one week to baths of corrosive mercuric chloride and weak ammoniated mercury ointment.

The importance of demonstration of the presence of a fungus by microscopical examination or the culture tube is emphasized by the fact that in Illinois, ringworm of the hands and feet is not compensable as an occupational dermatosis. I have had a number of private patients with occupational dermatitis who were denied compensation on the statement of dermatologists that these patients had ringworm. These statements were made by dermatologists after inspection only and with no attempt at examination with the microscope and the culture tube. In occupational dermatoses, one of the commonest mistakes is to assume that because of the presence of clinical evidence of ringworm of the toes, any dermatosis of the hands is, therefore, of mycotic origin.

In 1934, I presented a paper at the annual meeting of the American Dermatological Association on "Monilia Infections of the Hands and Feet," in which I called attention to the essential differences in the manifestations of Monilia infection of the hands and feet from those produced by the Trichophyton and Epidermophyton organisms.

Monilia infections of the hands and feet are essentially intertriginous and symmetrical with little or no vesication as seen in the well-recognized manifestations of hands and feet. Monilia onychia is almost always preceded by "bolster-like" paronychia, first described by MacLeod, whereas the ordinary ringworm infections of the nails are usually devoid of any indication of paronychia.[5]

As chairman of the Section on Dermatology in 1927, I read a paper entitled "Need for Research in the Treatment of Epidermophytoses." In that paper it was stated[6]:

> During the past decade widespread interest in the fungous infections has been stimulated by an ever increasing number of papers on the subject from all parts of the civilized world, and by an ever increasing number of clinical cases, both in public and in private practice. Very little attention, however, has been devoted to the purely therapeutic side of the question. It is a noteworthy fact that the first intensive laboratory attack on the problem was made in this country by Schamberg and Kolmer (*Arch. Dermat. & Syph.* **6**:746 [Dec.] 1922), who determined the fungicidal and fungistatic properties of various drugs and chemicals. Another valuable contribution to the subject was made by Meyers and Thienes (*J.A.M.A.* **84**:1985 [June 27] 1925), and from these studies came their formula for the alcoholic solution of cinnamon oil and thymol, which in my experience has been a very valuable preparation."

Since that time many valuable contributions, which were the result of long range planning and careful execution, have been made on various phases of mycology, such as those of Peck and his co-workers on the fungistatic and fungicidal action of sweat and the fatty acids. Also the intensive research of Peck and others in the field of the problems pertaining to the trichophytins must be mentioned. The work of Weidman, Hopkins, Lewis, and others is too well known to all for me to need recall it.

3. Mitchell, J. H.: Amycotic Dermatoses Simulating Ringworm and Erosio Interdigitalis Blastomycetica, Arch. Dermat. & Syph. **19**: 659 (April) 1929.

4. Mitchell, J. H.: Streptococcic Infection Simulating Ringworm of Hands and Feet, J. A. M. A. **104**: 1220 (April 6) 1935.

5. Mitchell, J. H.: Infection of Skin and Mucous Membrane by Monilia, Society Transactions, Arch. Dermat. & Syph. **23**: 814 (April) 1931.

6. Mitchell, J. H.: Need for Research in Treatment of Epidermophytoses, J. A. M. A. **89**: 421 (Aug. 6) 1927.

CLINICAL MANAGEMENT

Notwithstanding all this investigative work, no great stride has been made in the clinical management of the epidermal mycoses. Various new methods of treatment have been proposed but have been attended by disappointing results, prohibitive complications of technique, or dangerous sequalae.

In any discussion of the therapy of a cutaneous mycosis, there are certain factors that must be considered. One is the resistance, or if one prefers, the susceptibility of the person to a given fungus. It is a commonplace that patients will recall having had maceration in the fourth pedal interspace for 25 or 30 years without having had any other manifestation of ringworm. Being one of these persons, I have had ample opportunity to observe the mildness of the process.

Another factor which is most difficult to contend with is a sensitive skin. By this I do not mean necessarily a polyvalent sensitization, which is a real problem, but I refer to the skin that cannot tolerate two or three applications of half strength benzoic and salicylic acid ointment (Whitfield's ointment) without developing a luxuriant crop of follicular pustules of the Bockhart type, or two or three applications of chrysarobin, iodine, sulfur or mercury, without blossoming forth with an erythematous or vesicular dermatitis. In such instances, it is, according to my experience, necessary to stop all antiparasitic treatment and begin treatment of the dermatitis in the hope that it will subside.

The investigations of Peck [7] and his co-workers on the fungistatic and fungicidal effects of sweat and the fatty acids have resulted in tremendous advertising and selling campaigns for propionate-caprylate mixtures (sopronol propionate-caprylate compounds®) and zinc-undecate (desenex®) ointment. The essential ingredients in the former are caprylic and propionic acids and salts, and of the latter, undecylenic acid. Regardless of the opinion of others, it is my experience that both are of very little value in treatment of fungous infections.

The excellent work of Keeney [8] and his associates in the extensive and intensive study of the fungistatic and fungicidal activity of the fatty acids is convincing and impressive.

However, during the epidemic of ringworm of the scalp, I was searching for a fungicide that might be of value, and in so doing, I immersed hairs infected with Microsporum audouini in various preparations and planted them on solid medium. The organism grows as well or better with some of these preparations than without them.

My tests with Monilia (Candida) have been similar to that with hairs infected with audouini. Mixing equal parts of a thick creamy colony of Monilia with zincundecate ointment and planting on agar, I observed slightly smaller colonies at first, but eventually the growth was the same as that of the plant without the zincundecate ointment. Tests with propionate-caprylate mixtures ointment, benzalkonium chloride (zephiran chloride®), absorbine, Jr. (mixture of wormwood, thymol, menthol, iodine, echinacea, and calendula) and various other preparations gave similar negative results.

One episode in the treatment of dermatophytosis would have been very amusing if it had not resulted in such serious consequences. Paul DeKruif, who, after two years of undergraduate medical school training at the University of Michigan, has become the medical adviser to all the world via *The Reader's Digest,* pounced on an article by Dr. Francis, a retired United States Public Health officer. This short paper, in which the retired medical officer advised the use of camphor and phenol, appeared in THE JOURNAL of Dec. 6, 1941.[9] The good physician's enthusiasm was unbounded and uninformed. He advised the use of approximately equal parts of camphor and phenol and stated that it was nonirritating and very effective in the treatment of ringworm of the hands and feet. Obviously, neither Dr. Francis nor DeKruif knew anything of the background of this preparation.

In the early nineteenth century, one Italian physician and one French physician, independently, hit on the combination of camphor and phenol for sterilization of wounds and for application to various abscesses and infections in general. This combination was later to become a well-known preparation called campho-phenique® (mixture of camphor, phenol, and liquid petrolatum), marketed by a drug firm in St. Louis. The firm claimed that it contained 49% phenol and 51% camphor. The irritation and damage to the skin resulting from its use led to an investigation by the Council on Pharmacy and Chemistry, the report of which appeared in THE JOURNAL [10] and was signed by Dr. Puckner. Samples of the preparation, bought in the open market, showed that the formula had been changed so that it contained 20% phenol and 38% camphor; the rest was liquid petrolatum. This mixture is relatively innocuous compared with the combination of equal parts of camphor and phenol touted by Francis and DeKruif. The danger in the use of the equal-parts combination lies in the fact that in the absence of moisture it is inert and does not conduct electricity. However, addition of water to the mixture immediately releases phenol from the inert combination, as can be determined by the addition of ferric chloride. Phenol burns result, inasmuch as fungous infections are favored by the moist, interdigital surfaces of the toes. I was very busy for a year or more treating the results of therapy advised by a superannuated physician and espoused by one who had never graduated in medicine.

Ionic medication of the mycoses attracted much attention some years ago. In 1931, Shaffer [11] presented a comprehensive review of the literature and the value of the technique of the various dermatoses. Ten years later Greenwood and Rockwood,[12] limiting their investigation to the use of copper sulfate in the treatment of the my-

7. Peck, S. M.; Rosenfeld, H.; Leifer, W., and Bierman, W.: Role of Sweat as Fungicide, with Special Reference to Use of Constituents of Sweat in Therapy of Fungous Infections, Arch. Dermat. & Syph. **39**:126 (Jan.) 1939.

8. Keeney, E. L.; Ajello, L.; Broyles, E. N., and Lankford, E.: Propionate and Undecylenate Ointments in Treatment of Tinea Pedis and in Vitro Comparison of Their Fungistatic and Antibacterial Effects with Other Ointments, Bull. Johns Hopkins Hosp. **75**: 417 (Dec.) 1944.

9. Francis, E.: Phenol-Camphor for "Athlete's Foot," J. A. M. A. **117**: 1973 (Dec. 6) 1941.

10. Campho-Phenique, Report of the Council on Pharmacy and Chemistry, J. A. M. A. **48**: 1365 (April 20) 1907.

11. Shaffer, L. W.: Ionic Medication in Dermatology: Principles, Experimental Confirmation and Clinical Application, Arch. Dermat. & Syph. **23**: 287 (Feb.) 1931.

12. Greenwood, A. M., and Rockwood, E. M.: Iontophoresis of Copper Sulfate in Cases of Proved Mycotic Infection, Arch. Dermat. & Syph. **44**: 800 (Nov.) 1941.

cotic infections, agreed with Shaffer that the method is "complicated, technical, tedious, and time consuming." They found that when copper sulfate was introduced into the skin by iontophoresis, it was neither fungicidal nor fungistatic for T. gypseum, T. purpurium, and Epidermophyton inguinale.

Inhalation of ethyl iodide has been found by J. H. Swartz [13] to be an effective method of treatment, but the words of Shaffer, quoted above, might be used again in the description of this treatment. An overdose may result in some embarrassment on the part of the physician.

Intravenous injections of various drugs, especially strong iodine solution (lugol's solution), have been extolled. Inspired by the enthusiasm of Levaditi, I gave a large number of intravenous injections of strong iodine solution some 25 years or more ago. The results consisted chiefly of an occasional sclerosed cubital vein.

In the management of the dermatomycoses, prophylaxis must be considered as important as treatment. Osborne has presented convincing figures showing the reduction of infections in schools by means of the chlorinated soda foot bath. Spring,[14] however, showed that scales were viable after soaking one and one-half hours in swimming pool water chlorinated to the point of tolerance, but that the organisms were no longer viable after soaking for two hours. It was found, moreover, that the chlorinated swimming pool water does not effectively reach and kill the fungi in the interspaces of the toes.

In an attempt by John W. Williams [15] to determine the habitat of Trichophyton interdigitale outside the body, 1,500 cultures were made, one-half of which were made from student lockers. Floors were scraped and the margins of pools were likewise scraped, but in all of the 1,500 cultures, only one possible positive culture was obtained and that could not be identified.

Jamieson and McCrea [16] were able to grow pathogenic organisms from the insoles of shoes, and the infection of a large number of girls in an orphanage after wearing cast-off shoes was clinical confirmation of his laboratory findings. Sterilization of shoes by means of formaldehyde has been routine practice by many dermatologists for years, and the wearing of boiled cotton hose is recommended by all. However, the indiscriminate use of formaldehyde is dangerous and may set up a chronic dermatitis.

TRICHOPHYTIN

The use of trichophytin in the diagnosis and treatment of the mycoses has been disappointing, but it appears that it is of more value in the diagnosis than in the treatment of the fungous infections. In a series of more than 1,000 tests, it was found by Lewis, MacKee and Hopper [17] that the reaction to trichophytin is specific, but the specificity is determined by genus rather than by species. Different species of fungi vary greatly in their ability to sensitize, and patients with severe mycoses may fail to react. However, in all cases of trychophytid reaction the trichophytin test gave positive results, as also in all cases of inflammatory eruption due to a given fungus. It was found that the patch test was not so delicate nor so reliable as the intracutaneous test. There was little difference in the response of the skin of different parts of the body. The conclusion of these authors as to the value of the test in actual practice is of much interest. They believe that a positive reaction is of value only when it agrees with other findings, in which case it is of value and points to a favorable prognosis. But when the reaction is negative in the presence of true fungous infection, the prognosis is poor. When both the reaction and the examination for fungi are negative, it is fair to assume that the eruption is nonmycotic. This latter statement is of particular importance in occupational dermatoses.

Muskatblit [18] has found that the clinical diagnosis was more frequently corroborated by the trichophytin test than by the laboratory examination. In clinically mycotic cases, the test showed positive reactions in 60.3%, whereas laboratory confirmation was positive in only 39.7%. This seems like a low percentage for laboratory confirmation.

The use of trichophytin in the treatment of the mycoses is as yet unsatisfactory. When the case histories and the data of some of the highly enthusiastic reports are analyzed, it appears that the optimism of the writer is not justified, or at least it is not entirely supported by the evidence submitted.

The case against the use of trichophytin in the treatment of the dermatomycoses was well presented in 1935 by Traub and Tolmach.[19] In a series of 135 cases, using a commercial preparation in some of the cases, a pellicle preparation of their own in others, and a combination of the two in still a third group, they found apparent cures in 14 cases. Some of the patients showed early recurrence, and some of the so-called cures were questioned. In 63 cases no change was observed, or the patient's condition was made worse. The authors concluded that trichophytin had little, if any, effect on the course of the treatment.

The results of the use of vaccines, which differ from trichophytin in that toxic products, together with fungous elements, are utilized in treatment, were reported in 1938 by Tolmach and Traub.[20] Using three different kinds of vaccine on 60 patients with dermatophytosis with and without ids and tinea capitis, they found that 60% of the patients were entirely uninfluenced, with 9% apparently cured. The authors believed that both the cure and improvement of the cases were subject to question and that vaccine treatment of dermatophytosis is not yet practical.

The work of Peck and his collaborators holds much of promise in the solution of the problems involved in the use of trichophytins. Various observers have maintained that the skin reactive factors in trichophytin were not necessarily identical with the therapeutic or immunizing principle. With this idea in mind, daFonseca prepared

13. Swartz, J. H.; Blumgart, H. L., and Altschule, M. D.: Ethyl Iodide Inhalations in Treatment of Mycotic Infections of Skin and Allied Conditions, Arch. Dermat. & Syph. **21**: 182 (Feb.) 1930.
14. Spring, D.: Note on Effect of Chlorinated Swimming-Pool Water on Fungi of Toe Ringworm, Am. J. M. Sc. **185**: 775 (June) 1933.
15. Williams, J. W.: Habitat of Trichophyton Interdigitale Outside the Body, Proc. Soc. Exper. Biol. & Med. **31**: 984 (May) 1934.
16. Jamieson, R. C., and McCrea, A.: Ringworm of Feet: Shoes and Slippers as Source of Reinfection; Final Report, Arch. Dermat. & Syph. **44**: 837 (Nov.) 1941.
17. Lewis, J. M.; MacKee, G. M., and Hopper, M. E.: Trichophytin Test: Its Value as Diagnostic Aid, Arch. Dermat. & Syph. **38**: 713 (Nov.) 1938.
18. Muskatblit, E.: Allergic Manifestations of Fungous Diseases, M. Rec. **152**: 273 (Oct. 16) 1940.
19. Traub, E. F., and Tolmach, J. A.: Dermatophytosis: Its Treatment with Trichophytin, Arch. Dermat. & Syph. **32**: 413 (Sept.) 1935.
20. Tolmach, J. A., and Traub, E. F.: Treatment of Dermatophytosis with Vaccines, Arch. Dermat. & Syph. **38**: 925 (Dec.) 1938.

two different types of trichophytin extract, one called "dermatocofitin," containing only the skin test principle, and the other the "clasovaccine" or therapeutic principle, with no skin reactive factor present. Peck [21] attacked the problem by the study of pH cultures of T. gypseum in fluid Sabouraud medium. Starting from both the acid and alkaline side, he found that the pH of cultures of T. gypseum tended to go up or down the scale until a pH of 8.6 was reached, after which there was little fluctuation. In the period of rise there was an increase in skin test principle, whereas below a pH of 4, the reverse was true. By means of control and determination of pH, it was found possible to separate the skin test principle from the desensitizing fraction. The desensitizing trichophytins thus produced were found to be extremely effective in producing rapid desensitization in suitable patients without any local or focal reaction. The total nitrogen content of the trichophytin bore no relation to the amount of the skin test factors present in the bouillon.

Miller, Stewart, and Kimura,[22] however, attach much importance to the nitrogen content and accept the opinions of Bloch and his co-workers that this determination is the only method known at present for the standardization of trichophytin. Goodman and Marks [23] and Traub and Tolmach [20] are of the same opinion.

After considerable experience with trichophytin and oidiomycin as diagnostic and therapeutic aids, I have abandoned both as being of little value.

MYCOTIC INFECTIONS

In my early work with the mycotic infections of the hands and feet, I was influenced by Sabouraud who gave me the impression that all such cases were due to E. inguinale, or E. floccosum as it is known today. Therefore, only that organism was considered in the first series of cultures reported, although the Kauffman-Wolff organism was mentioned. However, in the second paper read in 1921, I reported the findings of 18 cultures of E. inguinale in a series of 103 cases and when the six cases previously reported are added to this number, approximately 20% had cultures of E. floccosum. In 36 cases the white organism was grown, and the addition to this number of the four previously reported cultures gave approximately 33% positive cultures for T. interdigitale, or T. gypseum as it is known today.

In view of these early findings of mine when I was groping along, it is interesting to note that Hopkins and his co-workers [24] in an intensive study of troops at Fort Benning, Ga., from 1942 to 1945 found T. gypseum in 47%, T. purpurium in 36%, and E. floccosum in 17% of the cases examined. Later Burke and Bumgarner [25] in a survey of 1,000 veterans found T. gypseum in 64%, T. rubrum in 34%, and E. floccosum in only 2%. Also in 1949, the same authors [26] reported the results of a study of 1,000 veterans with a service diagnosis of mycosis. In this series T. gypseum was found in 59.3%, T. rubrum 32.7%, and E. floccosum in 2%, and Candida albicans in 6%.

The gradual decrease in the number of positive cultures for E. floccosum is apparent in my own work, and the question has arisen in the past as to whether T. gypseum may not be the degenerative form of E. floccosum.

Sabouraud has said that two pathogenic fungi are never found in the same person. However, I have records and photographs of numerous cases in which one fungus was cultivated from the toes and another from the crotch. In an elderly man, cultures were made from the same scales from the inguinofemoral folds. The colony of E. floccosum could be seen at the bottom of the tube, and when subcultures were made, the two organisms coexisting could be definitely identified.

I am particularly interested in the findings of Burke and Bumgarner [26] in 41 patients, all white men, with service diagnoses of otomycosis. In only five were fungi found. In all five, a species of Aspergillus was cultivated.

Of all of the fallacies fastened on the medical profession by constant repetition in print and by word of mouth, the idea that all inflammatory conditions in the auditory canal are mycotic is about the most fallacious. In hundreds of cases with the history of a diagnosis of fungous infection of the ear and treated as such, I have yet to see a patient who had had a microscopical examination for a fungus made, much less a culture. In all the many cases seen in private practice, I have seen only one due to Aspergillus niger. My experience with these cases led me to present a paper on the subject before the Section on Dermatology at the Kansas City, Mo., meeting

S. N., male aged 39 years. Fungous infection of the nails for many years. After daily applications of ammoniacal silver nitrate solution for three months, the nails were trimmed showing the thin black line of the nails but also showing the perfectly white thickened nail bed with no evidence of penetration by the ammoniacal silver nitrate solution. In this nail bed material, fungi were demonstrated microscopically and were viable.

in 1936. Attention was called to the fact that these cases are due usually to microbic rather than to fungous infection and that the Streptococcus can frequently be grown. These findings have been corroborated by investigators who worked with naval personnel in the Pacific.

Fungous infection of the nails is to me, as yet, an unsolved problem. The whitish involvement of the surface of the nail is usually amenable to local applications, but

21. Peck, S. M., and Rosenfeld, H.: Effects of Hydrogen Ion Concentration, Fatty Acids and Vitamin C on Growth of Fungi, J. Invest. Dermat. **1**: 237 (Aug.) 1938.

22. Miller, H. E.; Stewart, R. A., and Kimura, F.: Undenatured Trichophytin: Preparation and Clinical Application, Arch. Dermat. & Syph. **44**: 804 (Nov.) 1941.

23. Goodman, H., and Marks, I.: Reactions to Trichophytin Compared with Reactions to Other Bacterial Products, Arch. Dermat. & Syph. **31**: 819 (June) 1935.

24. Hopkins, J. G., and others: Dermatophytosis at Infantry Post: Incidence and Characteristics of Infections by 3 Species of Fungi, J. Invest. Dermat. **8**: 291 (June) 1947.

25. Burke, R. C., and Bumgarner, F. E.: Superficial Mycoses of Veterans: Dermatophytosis and Cutaneous Moniliasis; Correlation of Clinical Manifestations and Etiologic Agent, Arch. Dermat. & Syph. **60**: 1120 (Dec.) 1949.

26. Burke, R. C., and Bumgarner, F. E.: Superficial Mycoses of Veterans: Survey of 1,000 Veterans with Service Diagnosis of Dermatomycosis, Arch. Dermat. & Syph. **60**: 742 (Nov., pt. 1) 1949.

when the nail bed is involved, every known method of treatment may fail. Surgical removal is usually followed by recurrence of infection in the newly formed nail. The roentgen ray is of no value. Iodine in goose grease and other liquids may be useful. Double strength benzoic and salicylic acid ointment may be of value, and the application of a carefully fitted 40% salicylic acid plaster may give results.

My therapeutic results with the use of ammoniacal silver nitrate solution in fungous infections of the nails as advocated by Nickerson and White [27] have amounted to nothing. I have treated a sizable number of cases with negative results. After four months of daily applications of ammoniacal silver nitrate solution to the nail of the big toe, the nail bed remains white, and numerous viable mycelia are present. I have other similar cases (figure).

25 East Washington Street.

27. Nickerson, W. J., and White, S. J.: Therapeutic Value of Ammoniacal Silver Nitrate in Fungous Infections of Nails, Arch. Dermat. & Syph. 57: 935 (June) 1948.

INTRAVENOUS USE OF PITUITARY ADRENOCORTICOTROPIC HORMONE (ACTH)

A REPORT ON ITS ADMINISTRATION IN TWENTY-FIVE PATIENTS

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Gordon [1] has recently reported that the increase in response in the eosinophil count and in the urinary excretion of steroids in subjects who received pituitary adrenocorticotropic hormone (ACTH) by continuous (12 hour) intravenous infusion was twentyfold when compared to response from the administration of the same dose of the drug given in a single intramuscular injection. With this knowledge, we administered pituitary adrenocorticotropic hormone intravenously to 25 patients with diseases generally known to be responsive to the drug. This report summarizes our experience with this form of treatment. We were particularly impressed by the effectiveness of small amounts of the medication when given by this route, for the doses employed were only fractions of the amounts that had previously been required by intermittent intramuscular injection.

MATERIALS AND METHODS

All patients studied were hospitalized and under our supervision during the entire treatment period. Blood pressure and weight were recorded daily. Urinalysis, complete blood count, erythrocyte sedimentation rate, total eosinophil count, electrocardiogram, serum sodium, serum potassium, serum chloride and the carbon dioxide combining power of the plasma were determined weekly. When indicated, these studies were done more frequently. In patients with rheumatoid arthritis and spondylitis the range of active and passive motion was determined weekly. All patients were on diets containing approximately 2 Gm. of sodium chloride a day. Pituitary adrenocorticotropic hormone [2] was administered each day in one of three ways: by continuous intravenous infusion for eight to 20 hours, by intermittent intravenous injection every six hours and by continuous intramuscular drip. With one exception, all patients received pituitary adrenocorticotropic hormone by continuous intravenous infusion during a portion of their treatment period. Administration by intermittent intravenous injection and by the continuous intramuscular drip method were employed mainly for the purposes of comparison with the continuous infusion technique. Prior to and during the treatment period several patients were given intravenous infusions to which medication was not added. When given over the 20 hour period the infusion was started at 11:00 a. m. and discontinued at 7:00 a. m. of the following day. This allowed time for necessary laboratory work and for the patient's self-care. When given continuously for eight to 12 hours the night hours were originally included because of the known diurnal variation in adrenal cortical activity.[3] In subsequent patients the daytime hours were included so that comparisons could be made with administration during the night hours. The medication for each patient was kept separately. Initially the daily dose of pituitary adrenocorticotropic hormone used was 20 mg. This amount was reduced by 2.5 to 5 mg. a day at three to six day intervals. If relapse occurred the dose was increased by the same amount. Subsequent patients were started on 5 to 10 mg. a day with gradual reduction in dose for maintenance purposes. The daily dose of pituitary adrenocorticotropic hormone was dissolved in a 5 per cent solution of glucose in distilled water containing 0.2 per cent potassium chloride.[4] When given for the 20 hour period the medication was added to 1 or 2 liters of fluid. When given for eight to 12 hours the medication was added to either ½ or 1 liter of fluid. Ten cc. of 1 per cent procaine hydrochloride (novocain®) were added to each liter of the intramuscular drip, and 300 TR (tubidity-reducing) units of hyaluronidase [5] were deposited at each site of injection. Transient local edema and induration occurred frequently with this procedure. By attaching the infusion bottle to a wheelchair most patients on intravenous infusion became semiambulatory and were able to sit in the chair or to walk behind it.

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Reviewed by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

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4. Supplied as kaladex,® Don Baxter, Inc.

5. Supplied as wydase,® Wyeth, Inc.

Data on Twenty-Five Patients Treated with Pituitary Adrenocorticotropic Hormone (ACTH) Administered Intravenously

Mode of Administration	Average Daily Dose	Total Dose

Data on Twenty-Five Patients Treated with Pituitary Adrenocorticotropic Hormone (ACTH) Administered Intravenously

Case	Age	Sex	Diagnosis	Mode of Administration*	Days Treated	Range of Dose, Mg.	Average Daily Dose, Mg.	Total Dose, Mg.	Clinical Response‡	Reactions	Remarks
1 W. B.	31	M	Rheumatoid arthritis, severe	A	16	3-20	8	131	++++	Weight gain; euphoria; pyrogenic reaction	Refer to case report
				C	2	8	8	16			
				D	1	20	20	20			
2 W. M.	62	M	Rheumatoid arthritis, severe	A	42	2.5-10	6	155	+++	None	The response was more marked than that occurring with two previous courses of intramuscular injections of ACTH, each consisting of 1,500 mg. of ACTH given over a 15 day period
3 F. E.	36	M	Rheumatoid arthritis, mild	A	9†	2.5-10	8	72	++++	Weight gain; euphoria; hypertension	The reactions subsided when the daily dose given was reduced
4 M. I.	36	F	Rheumatoid arthritis, severe	A	14†	10-15	11	115	++++	Marked euphoria	The response was similar to that following a course of cortisone when 1,400 mg. had been given intramuscularly for 14 days
5 H. A.	24	M	Rheumatoid arthritis, mild	A	12	5-10	8	100	++++	Weight gain; euphoria; hypertension	
6 S. L.	49	M	Rheumatoid arthritis, mild; regional enteritis, severe	A	17†	5-10	8	150	++++	Weight gain; hypertension	In addition to complete remission of the arthritis, the steatorrhea which had been present for many months disappeared
7 M. S.	48	F	Rheumatoid arthritis, moderate	A	7	5-10	7	50	++++	None	The response was similar to that occurring with one previous course of intramuscularly administered ACTH when 1,000 mg. were given over 15 days; the onset of relief was more rapid than had occurred previously
8 W. W.	29	M	Rheumatoid arthritis, moderate	A	16	3-20	9	141	+++++	Pyrogenic reaction	A previous course of intramuscularly administered cortisone, 1,700 mg. over 12 days, had given a response evaluated as +++
				C	3	4-8	7	20			
9 W. P.	31	M	Rheumatoid spondylitis, moderate	A	16	5-20	8	121	++++	Weight gain; moon face; ankle edema; pyrogenic reaction	Within six days of cessation of medication a relapse occurred; this responded rapidly to another course of intravenously administered ACTH—the daily dose was 5 mg., and the period of administration was five days
				C	2	4	4	7			
				D	1	20	20	20			
10 J. M.	24	M	Rheumatoid spondylitis, severe; rheumatic heart disease, inactive	A	7†	8-10	9	62	+++	Weight gain; moon face; hypertension; restlessness	The treatment was discontinued because of the restlessness which occurred when the continuous intravenous infusions for the 20 hour period were being given; the treatment was subsequently resumed at dose levels of 5 mg. per day, and no further reactions have occurred; the clinical response is unchanged
				B	2	10	10	20			
				C	3	8	8	24			
11 J. G.	34	M	Rheumatoid spondylitis, severe	A	7†	10-15	13	90	+++	Acne	ACTH administered by intermittent intravenous injection was less effective than administration of the same daily dose by continuous 12 or 20 hour infusions; there was no difference in response to the 12 hour infusion when it was given during the day or during the night; prolongation of infusion time from 12 to 20 hours seemed to increase the clinical response
				B	11	5-15	6.5	70			
				C	8	8-16	13	104			
12 M. T.	28	M	Reiter's syndrome, moderate	A	26	2.5-20	6	165	++++	Moon face; pedal edema	A prior course of ACTH given by the intramuscular route gave a response evaluated as +++; 1,500 mg. of ACTH had been given over a 15 day period; interruption of medication or substitution of placebo therapy resulted in prompt recurrence of his symptoms
13 R. M.	28	F	Rheumatoid arthritis, severe; psoriasis, severe	A	14†	5-10	6.5	90	+++	Weight gain; moon face; euphoria; hypertrichosis	The response was similar to a course of ACTH given intramuscularly; this consisted of a total dose of 2,000 mg. given for three weeks
14 W. F.	40	M	Rheumatoid arthritis, mild; psoriasis, severe	A	10	1-10	4	39	++++	Acne; moon face; left foot drop	Refer to case report
				C	4	20	20	80			
15 T. J.	37	M	Rheumatoid arthritis, mild; psoriasis, severe	A	7	5-10	8	60	+++	Acne; moon face	The intravenous infusions followed a course of intramuscular administration of ACTH; the remission was maintained, and there was further, though still not complete, disappearance of the psoriasis
16 N. K.	35	M	Bronchial asthma; angioneurotic edema	A	5	5-15	9	47	++++	None	Symptoms recurred during the first three days during the interval in which the infusion was not running; these subsided shortly, when the therapy was resumed
17 M. P.	63	F	Bronchial asthma	A	8	3-20	11	88	++++	None	There was no response to the usual antiasthmatic measures, but rapid improvement occurred with administration of ACTH
18 L. L.	36	M	Bronchial asthma	C	5	8	8	40	++++	None	Refer to case report
19 R. A.	29	M	Bronchial asthma	B	2	5	5	10	++++	None	Similar to case 17
20 W. G.	57	M	Chronic disseminated lupus erythematosus	A	3	10-20	17	50	+++	Marked confusion	Refer to case report
21 C. G.	23	M	Polyarteritis nodosa	A	26†	10-20	17	445	++++	Weight gain; euphoria; personality change	A previous course of ACTH resulted in a response evaluated as ++; the total dose given was 1,500 mg., and this was administered for 15 days; relapse tended to occur when placebo infusions were substituted for the infusions containing ACTH
22 M. G.	30	M	Rheumatic fever, acute recurrent	A	13	10	10	130	+++	Gastrointestinal bleeding	Refer to case report
23 C. T.	59	M	Scleroderma	A	3	11	11	32	0	Restlessness; nausea and epigastric distress	When intravenous medication was resumed the same symptoms recurred and were severe enough to discontinue further treatment
24 J. G.	64	M	Neurodermatitis	A	11	3-20	9	94	++++	None	The improvement was dramatic in a disease which had been very resistant to treatment for many years
25 E. H.	23	M	Eczematoid dermatitis, angioneurotic edema	A	8†	5-20	12.5	90	+++	None	Substitution of placebo therapy on the third day resulted in initiation of relapse which was controlled by resumption of infusions of ACTH

* ACTH was administered in one of four methods: by continuous intravenous infusion for 20 hours each day (A), by continuous infusion for 8 to 12 hours each day (B), by intermittent intravenous injections every six hours (C) and by continuous intramuscular drip for 20 hours each day (D). Comments under Response, Reactions and Remarks refer to the entire period of treatment and not to just one portion.

† The treatment period has not been completed as of this writing.

‡ The clinical response was graded from 0 (no response) to ++++ (disappearance of disease activity).

Pituitary adrenocorticotropic hormone was given intravenously to 25 patients for from two to 26 days. Twelve of the patients had rheumatoid arthritis. Of these 12, five had associated diseases: psoriasis in three, regional enteritis in one and conjunctivitis and urethritis (Reiter's syndrome) in another. Three patients had rheumatoid spondylitis, and four had bronchial asthma. Of the remaining six, one each had lupus erythematosus, polyarteritis nodosa, scleroderma, rheumatic fever, neurodermatitis and eczematoid dermatitis. The case reports are summarized in the accompanying table. Five cases will be described in greater detail.

REPORT OF CASES

CASE 1 (see table).—W. B., a 31 year old white man, had had chronic progressive rheumatoid arthritis involving most of the peripheral joints for the past seven years. He had had numerous hospitalizations and had received typhoid vaccine, desoxycorticosterone acetate, gold, salicylates and physiotherapy without definite benefit. Prior to the intravenous administration of pituitary adrenocorticotropic hormone, he had received three courses of the drug given by intramuscular injection at six hour intervals. In the first treatment 40 mg. were given daily for 12 days, a total of 480 mg. There was no clinical improvement or any significant change in any laboratory studies. Four hours after the first dose of pituitary adrenocorticotropic hormone (25 mg.) the eosinophil count had dropped 50 per cent. Two months later a second course of pituitary adrenocorticotropic hormone was given intramuscularly over a 12 day period. The total dosage was 1,000 mg., with the daily dose being 80 to 100 mg. There was moderate relief of pain, and the tenderness and swelling of the affected joints decreased. The sedimentation rate remained elevated. The total eosinophil count dropped more than 50 per cent. The patient relapsed within four days after the last dose of pituitary adrenocorticotropic hormone. One month after relapse the drug was started again, 100 mg. being given daily for 15 days. The response was similar to that which followed the previous course. The mode of administration was then abruptly changed to continuous intravenous drip given daily for 20 hours. Twenty mg. of pituitary adrenocorticotropic hormone were given daily for the first two days. Within 24 hours further improvement occurred, and in 48 hours the patient was free of joint pain and swelling. After 48 hours 20 mg. of the hormone were administered by intramuscular drip. On the next day he began to show mild relapse. He was again placed on daily continuous infusion of the drug, with 10 mg. being administered for five days, and then the dosage was reduced to 5 mg. a day for three days. Within 24 hours he had regained the previously noted improvement. The total eosinophil count, which was 121 cells per cubic millimeter before the intravenous mode of administration, fell to less than 11 cells per cubic millimeter. The sedimentation rate fell and was normal on the seventh day. On the thirteenth day the dose was decreased to 3 mg. daily for two days, at which time a mild relapse occurred. The daily dose was then raised to 5 mg. for four days, and within 24 hours the symptoms disappeared. One of the patient's greatest difficulties had been immobility of the mandibular joints. These loosened sufficiently so that dental care could be given for the first time in several years. Medication was stopped for four days, during which time a mild relapse occurred. Pituitary adrenocorticotropic hormone was then given by intermittent intravenous injection, 1 mg. being injected every six hours. There was some improvement, but on the second day headache and chills developed, and the temperature rose to 104 F. The temperature returned to normal within 24 hours. Three days after the pyrogenic reaction he was feeling well. At the present writing, three weeks since treatment was stopped, he has remained in 70 to 80 per cent remission.

Comment.—This case is representative of many patients treated in this series. The response to the intravenous form of administration was more rapid in onset and the improvement more complete than that occurring after administration of larger amounts of the drug given intramuscularly.

CASE 14 (see table).—W. F., a 40 year old white man, had had rheumatoid arthritis and psoriasis for seven years. On admission he had painful swollen knee, ankle and finger joints with moderate limitation of motion. He also had an extensive psoriasis. He was given a total of 2,500 mg. of pituitary adrenocorticotropic hormone by intermittent intramuscular injection every six hours during a 25 day period. The range of joint motion increased 50 per cent. There was decrease in the pain and swelling of the affected joints. The skin lesions cleared, although a few patches of psoriasis persisted. Facial acne and mild systolic hypertension occurred. The sedimentation rate did not return to normal. There was a 50 to 60 per cent fall in the eosinophil count. The patient was then started on oral cortisone, receiving a total dosage of 1,400 mg. throughout 18 days. There was recurrence of pain and swelling in the joints, and the skin lesions spread during the treatment. At this time pituitary adrenocorticotropic hormone was resumed, 5 mg. being given by intermittent intravenous injections every six hours for four days. Within 24 hours the pain and tenderness decreased. Mobility in the joints increased. On the fifth and sixth days 10 mg. of the hormone were given by continuous intravenous infusion over a 20 hour period. Five mg. were administered on the next two days, then 2 mg. daily for three days and finally 1 mg. daily for the last three days of treatment. Within 24 hours after starting continuous intravenous infusion further improvement occurred. Within 72 hours the patient felt better than he had during any of the previous treatment periods. He was able to walk without difficulty, and there was full return of strength in his hands. The skin lesions began to clear and at the end of the treatment period were no longer present. Reactions which occurred during treatment included facial acne, weight gain, moon-shaped face and a left foot drop. It is not known whether this neurological lesion is in any way related to the medication employed. The eosinophil count fell to less than 11 cells per cubic millimeter. An attempt is being made to keep this patient in remission by intravenous doses of pituitary adrenocorticotropic hormone given at weekly intervals.

Comment.—In this case the response to continuous intravenous administration of the drug was more marked than with intermittent intramuscular injections, intermittent intravenous injections or oral cortisone. The possibility of maintenance therapy by periodic intravenous infusions of the hormone is being explored.

CASE 18 (see table).—L. L., a 36 year old white man, had a one year history of bronchial asthma which was becoming increasingly severe. Because of refractoriness to the usual antiasthmatic measures he was given a six day course of pituitary adrenocorticotropic hormone. This was administered by intramuscular injections at six hour intervals. The average daily dosage was 125 mg., with the total being 760 mg. He responded rapidly to this medication. The vital capacity, which was initially 37 per cent of normal, rose to 90 per cent of normal. His appetite increased, and he felt better than he had for several months. After discontinuance of medication he remained well for several weeks but then relapsed and was rehospitalized. A week of conventional treatment was again ineffective, and he was started on intermittent intravenous injections of the hormone, 2 mg. being given every six hours for five days. He responded in the same manner as he had before. The total dose of the drug given was 40 mg.

Comment.—This case was the only one in this series in which the patient did not receive pituitary adrenocorticotropic hormone by continuous intravenous infusion. Had this route been tried it is likely that the response would have been just as satisfactory with even smaller doses. This report shows the practicability of the use of the

hormone given intravenously in acute disease states. The total dosage used was 1/20 of that given by intermittent intramuscular injection.

CASE 20 (see table).—W. G., a 57 year old white man, had had disseminated lupus erythematosus for two years. He had received three courses of pituitary adrenocorticotropic hormone therapy, each consisting of 2,500 mg., given over a three week period. The medication had been given intramuscularly at six hour intervals. The daily dosage was between 80 and 100 mg. Within 48 hours after onset of each course of treatment he was clinically improved. His appetite increased; a sense of well being prevailed, and pain decreased. The eosinophil count fell to 40 to 60 per cent of pretreatment levels. There was no significant change in other laboratory studies. The sedimentation rate remained elevated. Remission could be maintained only by high doses, for when the dose was lowered or treatment was stopped the patient promptly relapsed.

One month after the last course of treatment the hormone was started by continuous intravenous infusion. Twenty mg. were given daily for two days. On the third day the dose was reduced to 10 mg. Within 24 hours improvement similar to that with intramuscular therapy occurred. After 48 hours the improvement increased and was more noticeable than with any previous courses of treatment. The medication had to be discontinued on the third day because of the sudden onset of extreme restlessness and confusion. This lasted several hours. The eosinophil count had fallen from a resting value of 154 to less than 11 cells per cubic millimeter. Within three days after stopping administration of the hormone, the patient relapsed to his former state. He refused further medication if given by the intravenous route.

Comment.—Pituitary adrenocorticotropic hormone given by continuous intravenous infusion produced more rapid onset of improvement, as well as greater response, than had occurred with three previous courses of the drug given intramuscularly. The treatment had to be stopped because of the onset of toxic symptoms. This had not occurred previously. Treatment using smaller doses was not resumed because of the patient's refusal.

CASE 22 (see table).—M. G., a 30 year old white man, had had recurrent acute rheumatic fever. His complaints were those of severe precordial pain, cough and shortness of breath of several days duration. In the past he had been successfully treated for subacute bacterial endocarditis. On this admission the patient was acutely ill. A friction rub was heard over the entire precordial area. Diastolic and systolic murmurs were audible over the aortic area. There was prominence of the left cardiac border by x-ray, and fluid was present in the right costophrenic angle. Pituitary adrenocorticotropic hormone seemed indicated because of the gravity of the patient's condition.

The hormone was given by continuous intravenous drip for 13 days. Ten mg. were given each day. Within 24 hours clinical improvement had occurred. The friction rub disappeared by the third day. At the same time the temperature and pulse returned to normal. The patient continued to do well until the tenth treatment day, when he began to complain of epigastric distress. On the thirteenth day he suddenly passed a large tarry stool and went into shock. He recovered gradually under appropriate treatment. When questioned he remembered having had similar epigastric distress, although he had no knowledge of previous bleeding. Treatment with the hormone was not resumed.

Comment.—This patient was treated with pituitary adrenocorticotropic hormone by continuous intravenous infusion for 13 days. He received a total dosage of 130 mg. of the drug. On the thirteenth day of treatment massive gastrointestinal bleeding, which was most likely due to a peptic ulcer, developed. Gastrointestinal bleeding has been known to follow intramuscular injection of the hormone. This report emphasizes the dangers that are inherent in the use of the drug when any effective route is employed.

RESULTS

After our early experience with the intravenous infusion of the hormone, daily dose levels of 5 to 10 mg. were selected for use in further treatment. All patients responded adequately to these doses. Relapse did not occur in any patients during the period of treatment. All patients who were treated again responded in a fashion similar to, or even more rapid than, their response to the initial treatment. Many patients could be maintained on daily doses which were smaller than 5 mg. It was our impression that the critical level was represented by a daily dose of between 2.5 and 5 mg. Patients who could be maintained on these levels often remained in remission for varying periods of time when treatment was stopped. Those patients who required higher daily maintenance doses often relapsed promptly when medication was discontinued. Undesirable reactions occurred more frequently when higher daily doses of pituitary adrenocorticotropic hormone were employed. The only response to placebo injections or infusions was mild subjective improvement. Relapses occurred in three patients when placebo therapy was substituted for intravenous infusion of the hormone.

The response to the continuous infusion of a single dose of the drug during each 24 hour period was roughly proportional to the length of its administration. This was demonstrated in case 11 (see table), for with the same daily dose of pituitary adrenocorticotropic hormone the 20 hour infusion was more effective than the 12 hour infusion, which in turn was more effective than intravenous injections every six hours. Many patients responded satisfactorily to continuous intravenous infusion given for eight to 12 hours each day. In spite of the reported diurnal variation in adrenal cortical activity there did not appear to be any marked differences, whether the infusions were given during the day or the night. In fact, in a few patients the daytime administration appeared somewhat superior.

Ten patients had prevously received the drug in intermittent intramuscular injections. In these the response to intravenous infusion of the hormone was usually more prompt and complete. Remissions after cessation of intravenous treatment were generally more prolonged than those after a course of intramuscular injections. Intermittent intravenous administration appeared to be more effective than intermittent intramuscular injections; continuous intravenous infusions were more effective than continuous intramuscular drip.

Most patients showed a distinct increase in appetite during treatment. The low salt diet was accepted readily. The weight gained was usually lost subsequently, although several patients maintained a gain of 907 to 2,268 gm. (2 to 5 lb.) when treatment was discontinued. The eosinophil counts and the sedimentation rates fell in all patients. Eosinophil counts of less than 11 cells per cubic millimeter were common (i. e. none seen). The change in the eosinophil count and in the sedimentation rate occurred earlier and was more marked in the patients treated with continuous intravenous infusion of pituitary adrenocorticotropic hormone than in those treated with intramuscular injection. No significant alteration was seen in the red blood cell count, the hemoglobin level or the serum proteins. A polymorphonuclear

leukocytosis occurred in the majority of patients. Two patients developed transient hyperglycemia and glycosuria. Hypokaliemia did not occur.

Medication was interrupted in seven patients because of undesirable reactions. In three of these treatment could not be resumed. The patient in case 20 refused further treatment, the one in case 22 had severe gastrointestinal hemorrhage, and in case 23 (see table) the same untoward symptoms recurred with subsequent treatment. Common complaints during the first few hours of infusion were flushing of the face, a feeling of tightness across the chest and a sense of fullness in the abdomen. It was our impression that when smaller volumes of fluid were administered these complaints became less frequent. Symptoms and signs suggestive of Cushing's syndrome, such as acne, moon-shaped face, fluid retention and hypertension, were seen in many cases. These tended to disappear with reduction in dose and interruption of treatment. Many patients exhibited varying degrees of euphoria. Pyrogenic reaction occurred in three patients who were receiving intermittent intravenous injections of pituitary adrenocorticotropic hormone.[6] These reactions did not recur with subsequent infusions. It is uncertain whether the left foot drop that developed in case 14 was in any way related to use of the hormone.

COMMENT

The response to the hormone given over the 24 hour period depends on the amount, the route and the frequency of administration. Heretofore the daily amounts have varied from 40 to 160 mg. at onset of treatment, with reduction to maintenance doses of between 10 and 20 mg. a day. The route of administration has been the intramuscular one. Injections have been given at four to 12 hour intervals but are almost routinely administered every six hours. When the total daily dose is subdivided and given at more frequent intervals there is a greater response, as judged both by clinical improvement and by laboratory tests.[7]

Attempts have been made to increase the effectiveness of the drug by alterations in its plan of administration.[8] Efforts have been made to prolong its action so that fewer injections would be required. A long-acting form of pituitary adrenocorticotropic hormone (adactar®), which is prepared by adsorbing the hormone onto a colloidal aluminum phosphate carrier, represents such a product. This material, given once daily, produced adequate responses, though local reactions limit its usefulness.[9]

Although the hormone has been used clinically for several years there has been little mention made of the possibilities of its intravenous administration. Some reasons for this may have been the impurities present in the earlier products, the potential hazards of foreign protein therapy and the belief that administration by this route would offer no advantages over the more convenient intramuscular route. Moreover, literature supplied by the manufacturer caution against its intravenous use.

In 1948 Sayers and associates[10] described the fate and metabolic effects of pituitary adrenocorticotropic hormone given intravenously. Single doses of 50 and 100 mg. were given intravenously, in 200 ml. of saline over a one-half to one hour period, to two adult men. The only untoward reaction was mild chill and fever in one subject. Within two hours after administration the plasma content of the hormone had returned to its preadministration level. The maximum activation of the adrenal cortex as measured by the metabolic response occurred by the third hour and disappeared by the end of the sixth. Gordon, as we pointed out, was able to show a twentyfold increase in response to pituitary adrenocorticotropic hormone when a given dose was administered intravenously over a 12 hour period, as compared with administration of the same amount by a single intramuscular injection.[1]

Our experience has shown that by the simple expedient of changing from intermittent intramuscular injections to continuous intravenous infusion much smaller amounts of the hormone were needed to produce effective responses. Reasons for these differences are not known, but it is of interest to speculate on possible explanations. The hormone disappears rapidly from the blood stream after intravenous injection.[11] In vitro incubation of the drug with plasma, kidney or liver tissue results in inactivation of the hormone. After injection of pituitary adrenocorticotropic hormone labeled with I^{131} the adrenal cortex was found to contain the highest concentration of the material of any organ in the body. Two hours after injection the labeled material was no longer detectable in the adrenal cortex.[12] Inactivation of the hormone by muscle enzymes has been demonstrated by Dr. C. H. Li.[13] These data suggest that local destruction of the hormone occurs in muscle, that the disappearance rate of pituitary adrenocorticotropic hormone from the blood stream is very rapid and that the drug is selectively absorbed by the adrenal cortex. It is therefore reasonable to assume that the effectiveness of the hormone given intramuscularly depends on the rate and amount of effective material absorbed. The greater effectiveness of intravenous infusion is due to the more continuous adrenal cortical stimulation and to the fact that destruction does not occur at the injection site. Only

6. Similar reactions were observed in two other patients, not included in this report, who were receiving the hormone by intravenous infusion. Pyrogenic reactions of this type are rare in this hospital. A check of the sterile needles supplied was negative for pyrogenic material. (We are indebted to Dr. L. L. Ely and the Baxter Company for performing these studies. We were reassured by them that kaladex® was nonpyrogenic.) Two of the five medication vials showed evidence of contamination. In one the solution was turbid and from the other a gram-negative rod was grown. Although not proven, it is likely that all the pyrogenic reactions were due to contamination.

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minute amounts of the drug are required at any given moment to stimulate the adrenal cortex, e. g., 10 mg. of pituitary adrenocorticotropic hormone given over a 20 hour period supplies only 9 gamma of the drug to the blood stream each minute.

The obvious advantage of the intravenous form of administration of the hormone is its relative economy. In addition, the therapeutic results were often more satisfactory than had been seen with previous intermittent intramuscular administration. Refractoriness did not occur in any of the treated patients. This suggests that the phenomenon of refractoriness to the drug by the intramuscular method may be in part related to the mode of administration. The intravenous administration of pituitary adrenocorticotropic hormone is highly practicable in those acute conditions that in the past have responded satisfactorily to relatively short periods of intramuscular treatment. Patients must be followed closely when this method of administration is used, for undesirable effects may occur more frequently and with greater rapidity.

SUMMARY

Pituitary adrenocorticotropic hormone (ACTH) was administered intravenously for periods of two to 26 days in daily doses of 1 to 20 mg. to 25 patients with a variety of conditions. The average daily dose employed was between 5 and 10 mg. given for eight to 20 hours a day. Comparison was possible in 10 patients with previous courses of intermittent intramuscular injections, while in the remainder our past experience with intramuscular therapy was used as the basis for comparison. The therapeutic results were equally as good or even better, with only $\frac{1}{10}$ to $\frac{1}{20}$ of the doses previously employed. No patients were refractory to the hormone when given by this method. There were no patients who relapsed while being treated with adequate doses. There were no patients who were refractory on subsequent treatment. Reasons for the differences in the dose required by the two modes of administration are discussed. The advantages and disadvantages of the intravenous administration of the drug are enumerated.

ADDENDUM

Since completing this report we have treated 80 additional patients with the hormone by intravenous infusion. The initial treatment has been concluded in all patients. The longest period of continuous treatment was 42 days (case 2). Three patients included in the report have been treated again. The accumulation of further data has tended to confirm the results cited in the report.

BODY TEMPERATURES DURING ANESTHESIA IN INFANTS AND CHILDREN

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Fever, convulsions and death following surgery on children is a sequence of complications that has long been dreaded by surgeons and anesthesiologists. Dr. Isabella C. Herb [1] pointed out in "Abt's Pediatrics" in 1925 that operating room temperatures should be between 65 and 70 F., and that temperatures above this are exhausting to the patient. Although the staff at The Children's Memorial Hospital was conscious of this danger, our only preventive measures were the usual ones—such as light draping, cancelling of elective surgery on excessively hot days and ice packs following surgery if the temperature was noticeably elevated at the conclusion of surgery.

In the summer of 1947 we were suddenly jolted out of our complacency by two deaths due to postoperative hyperthermia.

REPORT OF CASES

CASE 1.—T. M., 1 year of age, was operated on for correction of webbed fingers. The day before surgery his temperature was 100.4 F. rectally. No reason for this slight elevation could be found. His rectal temperature the next day before going to the operating room was 98.8 F. The anesthesia was started at 9:35 a. m., and the operation was completed at 1 p. m. Ethyl chloride induction, followed by open drop ether, was used for the anesthesia. During surgery the anesthetist reported that the child was not doing well. The pulse and respiration rates were rapid, and there was profuse perspiration. Oxygen and intravenous fluids were administered. Following surgery the child was placed in an oxygen tent, the temperature in the tent being 76 F. The body was very hot, and the feet were cold. The pulse rate was 150 to 200, and the respiratory rate was 48 to 80 per minute. Death occurred at 2:45 p. m., when the rectal temperature was 108.5 F. At autopsy there was edema and congestion of the brain and leptomeninges, petechial hemorrhages throughout the brain and miliary tuberculosis only of the lungs, liver and spleen. The impression of the main cause of death was heat stroke.

CASE 2.—D. D., the second patient, was first operated on for a tracheo-esophageal fistula at the age of 3 days. The proximal end of the esophagus was brought out through the neck. The lower end was ligated, and a gastrostomy was done. On his last admission, at the age of just past 1 year, his temperature had fluctuated from 97.8 to 100.6 F. rectally. Anesthesia for anastomosis of the esophagus to the fundus of the stomach placed in front of the thorax was started at 1:35 p. m., and the operation was completed at 6:25 p. m. Anesthesia consisted of cyclopropane with oxygen administered by the to-and-fro technique. An adequate airway and gaseous exchange were difficult to maintain. At the end of the operation the temperature was 101.4 F. rectally, the pulse rate was 106, and the respiratory rate was 108. Three hours later the temperature was 108 + F. rectally. In spite of the patient being in an oxygen tent and ice packs, death occurred 12 hours later. Preoperative medication consisted of morphine, $\frac{1}{32}$ grain, and atropine sulfate, $\frac{1}{300}$ grain. At postmortem the essential observations were cerebral edema and congestion of the lungs, liver and adrenals.

Personal communications from other physicians in the Chicago area revealed other similar deaths of children in whom hyperpyrexia was developing during or

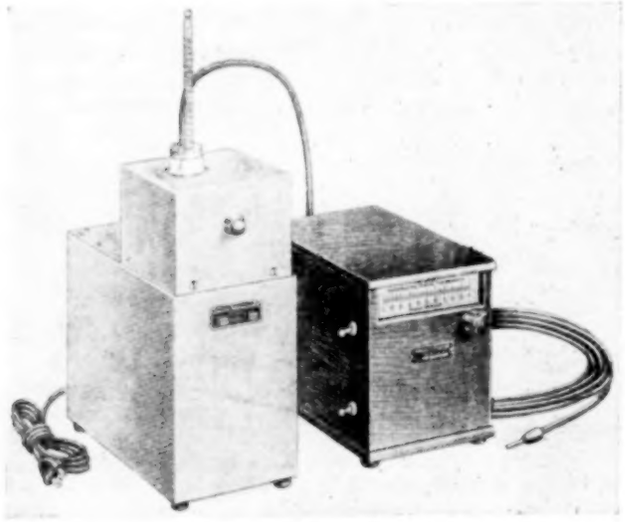
The water mattress was made by the Davol Rubber Company, Providence, R. I.

The thermo-electric clinical thermometer was made by the Central Scientific Company of Chicago.

From The Children's Memorial Hospital, Chicago, and the Ortho S. A. Sprague Memorial Institute Laboratories, Chicago.

1. Abt, I. A.: Abt's Pediatrics, Philadelphia, W. B. Saunders Company, 1925, vol. 6, chap. 160, p. 602.

following surgery. Although there have been some studies of temperatures during anesthesia, the significance of fever and its control has not been sufficiently emphasized. Knight [2] reported in 1942 that hyperpyrexia is of frequent occurrence during prolonged operative procedures, and that it has a deleterious effect on the recovery period. He believed that the closed system of administering anesthetic gases tends to raise the patient's temperature. He developed a gas cooler to control the rise in body temperatures. Burstein and Mark [3] state that in the closed system the carbon dioxide absorber, especially of the to-and-fro variety, tends to warm the breathing mixture. They reduced the heat by using ice bags on the upper end of the to-and-fro cannister and the face mask. By this method the rise in body and skin temperature is minimized. Without ice bags and with a room temperature of 85 F. the rebreathing atmosphere rises to between 104 and 113 F. With ice bag technique the gas temperatures were between 83 and 87 F.



Thermo-electric clinical thermometer with constant temperature well, galvanometer scaled for reading degree of temperature and rectal insert.

We were unable to adequately control the body temperatures in children by cooling the gases in a to-and-fro absorption system. We have had no experience with gases cooled with the circle technique.

PROCEDURE

Rectal temperatures taken at the termination of surgery revealed that the majority of the children undergoing surgery had some elevation of temperature. It seemed desirable that continuous temperature recordings should be made. Consultation by Dr. Bigler with Dr. Marshall N. States and Dr. Harris M. Sullivan of the Central Scientific Co., of Chicago, resulted in their construction of a thermo-electric clinical thermometer that was safe to use when explosive anesthetic agents were being administered.

The apparatus consists essentially of a thermocouple, one junction of which is held at a constant temperature in a constant temperature well, the other junction being an integral part of the rectal insert. The thermocouple current is read on the scale of a galvanometer that is calibrated in degrees. The instrument is completely electronic, and there are no sparking points.

Until the spring of 1948 we were concerned chiefly with the causes and prevention of hyperthermia. The advisability of producing hypothermia for the purpose of decreasing the oxygen demand during operation on "blue babies" was discussed. Perusal of the voluminous medical literature on cold therapy, the effects of cold and local refrigeration anesthesia, led us to believe that hypothermia may be produced safely in adults, but we were unable to find any reports of the deliberate production of hypothermia in critically ill children. In fact, the literature abounds with reports on the conservation of body temperatures in children undergoing surgical procedures. However, because of the acute need of increasing the arterial oxygen or of lowering the oxygen demand in patients with critical hypoxemia, we decided to resort to hypothermia.

Case 3.—Thomas O., aged 3 months and 25 days, was admitted to the hospital in May of 1948 with marked cyanosis. He had begun to have spells of cyanosis at the age of 2 months. During these attacks, which lasted for about 30 minutes, he became semicomatose and blue-black in color.

It was the unanimous opinion of the cardiologists, surgeons and anesthesiologist that the infant would probably die on the operating table. But it was obvious that he was doomed without surgery. Therefore, it was decided to attempt an anastomosis.

Morphine, 1/100 grain, and atropine, 1/300 grain, were administered one hour before the operation. Cyclopropane was administered by the to-and-fro technique, and the infant was surrounded with ice bags. His temperature was lowered until it registered 96 F. rectally. Very little cyclopropane was needed for maintenance of the anesthesia. In fact, for more than 90 minutes the cyclopropane valve was shut off. On the completion of an anastomosis between the aorta and the pulmonary artery hot water bottles were applied. When the rectal temperature reached 96.7 F. the patient began to react, and cyclopropane was again administered for closure of the incision. The patient was awake when he left the operating room. The total anesthesia time was three hours.

Convalescence: After 24 hours the infant was removed from his oxygen tent. Phleboclysis was discontinued, and he was given a full formula by bottle. He was discharged on the fourteenth postoperative day after an uneventful recovery.

RESULTS

The normal rectal temperatures of infants and children are approximately one degree higher than the mouth temperatures. In our tables, for convenience, we used rectal temperatures of from 99 to 100 F. as normal and placed all temperatures in units of one degree. Two hundred and fifteen patients between 4 days and 13 years of age who underwent surgery were studied. Eight patients had a temperature of from 100 to 101 F. on arrival in the operating room.

CONTROL GROUP

The control group consisted of 89 patients who had no cooling and 22 patients who were cooled with ice bags after alarming fever had developed. Hence, it is obvious that in these 101 children the number in whom extremely high temperatures were developing would be more than the number indicated in chart 1. It is also probable that some temperatures would have exceeded

2. Knight, R. T.: Elevation Of Body Temperature During Anesthesia and Its Control, Anesth. & Analg. **21**: 117-119 (March-April) 1942.

3. Burstein, C. L., and Mark, L. C.: Control Of Temperature Of Inspired Atmosphere In Absorption Technic, Anesthesiology **9**: 197 (March) 1948.

104 F. had not ice bags been used before the termination of surgery. Twelve of the 22 patients were in such critical condition that ice bags were used before their temperatures reached 102 F. We did not feel justified in jeopardizing any child for the purpose of a statistical study.

As can be seen in chart 1, 62.3 per cent of the children in the control group suffered temperatures above 100 F. Seven of these 63 children suffered temperatures of between 103 and 104 F., 15 of between 102 and 103 F. and 17 of between 101 and 102 F.

Of the 22 patients on whom ice bags were used, eight became normal or subnormal before surgery was completed. Of these, the temperatures were from 99 to 100 F. in three, 98 to 99 F. in three, 97 to 98 F. in one and 96 to 97 F. in one. The remaining 14 patients continued to have fever at the close of the operation.

In 41 patients with fever no ice bag cooling was used. Only five of these had a normal temperature, and one had a temperature of from 98 to 99 F. at the end of surgery. The other 35 continued to have fever. Although ice bag cooling of the patient was of some help, it was not as helpful as expected.

The normal and subnormal temperatures recorded in chart 1 were the highest temperatures recorded during surgery. Of those below 97 F., all but one were in infants under 6 months of age (chart 3). The exception was under 1 year of age. Of the 38 patients without some fever, only 20 were within the normal 99 to 100 F. range.

In this control group there was a spread of temperatures of from 93 to 104 F., or of 11 degrees.

ICE BAG COOLING

During the hot summer months ice bags were used on a number of surgical patients in an attempt to control the temperatures during surgery. This not only was disturbing during the operation but also was not particularly effective in controlling the fever in some patients. Twelve patients had ice bags packed around the body from the start of anesthesia. Of these, six (50 per cent) developed fever, two of from 103 to 104 F. and four of from 100 to 101 F. Of these six patients, body temperature was above normal at the end of surgery in four, normal in one and subnormal in one. Of the six with no fever, one was normal, two were from 97 to 98 F., and three were from 96 to 97 degrees F. at the termination of surgery. In two of the latter hot water bottles were substituted for the ice bags during surgery.

Because of this experience with ice bags, the development of a more easily controlled technique seemed advisable. A rubber mattress, measuring 19 by 24 inches, was constructed for us by the Davol Rubber Co. This mattress is compartmented in order to give it stability when it contains water. Inlet and outlet tubing at opposite corners facilitate the regulation of the mattress temperature by introduction of hot or cold water.

WATER MATTRESS GROUP

The water mattress was filled and in place on the operating table under the sheet. Each child was placed on the mattress before the induction of the anesthesia and surgical preparation. The temperature of the water in the mattress varied from tap water of 60 to 70 F. to ice water of 40 to 50 F. The temperature of the water was varied according to the age of the child, the room temperature and the degree of cooling desired by the anesthesist. For patients under 1 year of age ice water was not necessary at any time.

The water mattress was used with 102 patients. In 40 (39.2 per cent) the temperature rose above 100 F. rectally (chart 1). There were no patients with a fever over 102 F., in contrast to 24 in the control and ice bag groups. In only eight were the temperatures 101 to 102 F., and in 32 the temperatures were 100 to 101 F. The temperature was normal before the end of surgery in 25 of the 40 patients. It was below 100 F. in 15 minutes in two patients, in 30 minutes in 10, in 45 minutes in two, in 60 minutes in five, in 75 minutes in five and in two hours in one. Of these 25 patients,

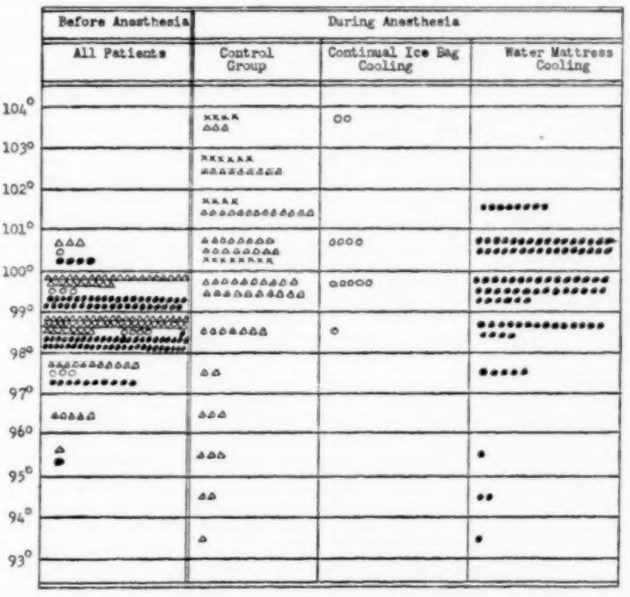


Chart. 1.—Highest temperatures recorded during anesthesia, with the explanation of symbols as follows: triangle, patient in whom no cooling method was employed; "x," patient in whom ice bags were used after rise in body temperature; open circle, patient in whom ice bag cooling was used continually, and closed circle, patient in whom water mattress cooling was employed.

the temperature before the end of surgery was 99 to 100 F. in 17, 98 to 99 F. in three, 97 to 98 F. in three, 96 to 97 F. in one and 94 to 95 F. in one. In three the cool water was replaced with warm water when the temperatures became subnormal.

Of the 63 cases with their highest temperatures normal or subnormal, as indicated in chart 1, those below 97 F. all occurred in infants under 1 year of age. Temperatures of from 97 to 100 F. were about equally distributed in the age groups over 1 year of age. Hot water replaced the cool water when the temperature became subnormal in 17 instances. In the mattress-cooled group the variation in temperatures was 11 degrees, but the fevers were not as high, and more cases fell within the normal or slightly subnormal range.

TEMPERATURES BEFORE SURGERY

In only eight patients was there an elevation of temperature before surgery. In one patient ice bags were used from the beginning of the anesthesia. The

temperature was 101 F. before surgery and gradually came down to 100.4 F. in two hours at the end of the operation. Three patients with temperatures of 100.2, 100.6 and 101 F. had no cooling, and at the end of surgery, one and one-half to two hours later, they had fevers of 101.6, 101.5 and 103.4 F. The remaining three patients were cooled with the water mattress. The temperature before surgery was 100.2 F. in two patients and 100.8 F. in the third, but at the end of 45 minutes two were normal, and the third was 100.6 F. at the end of surgery, one hour and 40 minutes later.

ONSET OF FEVER

A temperature of over 100 F. was present in 109 of the 215 patients studied. In chart 2 the time of onset of the fever after the beginning of surgery is divided into 15 minute periods for the first hour and then into hourly periods thereafter. In 63 patients (57.8 per cent) the temperature began to rise above normal in the first 15 minutes, while 27 (24.7 per cent) did so in the next 15 minutes. This means that 82.5 per cent of the febrile patients began to develop a temperature within the first 30 minutes. It is apparent that something besides the actual surgery must influence the temperature.

	No Cooling	Part Time Cooling	Continual Ice Bags	Cold Water Mattress
0 - 15 minutes	△△△△△△△△△△ △△△△△△△△△△	×××××××××× ×××	○○	●●●●●●●●●●●● ●●●●●●●●●●●● ●●●
15 - 30 minutes	△△△△△△	××××××××××	○○	●●●●●●●●●●
30 - 45 minutes	△		○○	●
45 - 60 minutes	△△△△			●
1 - 2 hours	△△△△△△△			
2 - 3 hours	△△			
3 - 4 hours				●

Chart 2.—Time of onset of fever after start of anesthesia (only temperatures above 100 F. recorded), with the explanation of symbols as follows: triangle, patient in whom no cooling method was employed; "x," patient in whom part time cooling was used; open circle, patient cooled through the continual use of ice bags, and closed circle, patient in whom water mattress cooling was employed.

PREOPERATIVE MEDICATION

In all but a few of the very young infants some preoperative medication was used. In patients a few weeks to a few months of age small doses of atropine were administered preoperatively. Between 1 year and 5 years of age the majority of the children received both morphine and atropine, while most of the children 5 years of age and older received morphine and scopolamine hydrobromide as preoperative sedation. Although it is generally believed that the belladonna group of drugs may cause fever, no relationship between these drugs and fever could be shown in this series. The old belief that morphine will tend to prevent fever[1] may be correct, but it did not prevent fever in over 50 per cent of the patients studied.

ANESTHESIA

The majority of the 215 patients studied were thoracotomies, usually for correction of a congenital heart lesion. These patients were almost routinely anesthetized with cyclopropane administered by a to-and-fro technique through an endotracheal tube. This may have had an influence on our observations; however, open drop ether, with and without oxygen insufflation under the mask, semiclosed, circle absorption and pharyngeal insufflation techniques were all used in various other types of surgery, and no definite influence on temperature elevation could be shown due to the method of administration.

AGE OF THE PATIENTS

The patients varied in age from 3 days to 13 years. The age of the patient had a very definite influence on the temperature during surgery. Below 6 months of age the infant tends to develop hypothermia—only one patient in this group had a temperature above 100 F. Between 6 months and 1 year of age, half the patients developed hyperpyrexia while one-half developed hypothermia. From 1 year to 13 years of age the children in the control group had an average temperature of 101 to 102 F., while the cooled group showed an average temperature of 100 F. The temperatures of all patients are shown in chart 3.

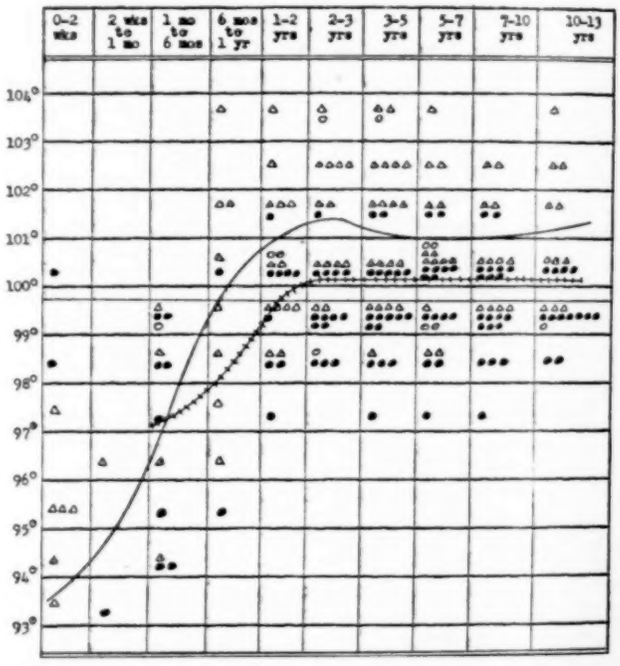


Chart 3.—Height of temperature during anesthesia relative to patient's age, with the explanation of symbols as follows: triangle, patient in whom no cooling method was employed; open circle, patient in whom ice bag cooling was used, and closed circle, patient in whom water mattress cooling was employed.

MONTH OF YEAR

There was very little difference between the number of patients with fever during the winter months and the number with fever during the hot summer months. Temperatures above normal were about equally divided between all months of the year, with the exception that the majority of fevers above 102 F. occurred between April and September. This same relationship holds true when one considers the operating room temperatures. We do not have air conditioning, and the temperature of the operating room varied from 69 to 88 F. Although there was a rise in temperature in some patients throughout this whole range, the majority occurred when room temperatures were between 76 and 82 F. The temperature about the patient must have

been higher at all times due to the necessary draping (kept as light as possible), the number of people around the table and the operating room lights.

LENGTH OF SURGERY

In the group of patients studied each anesthesia lasted from 30 minutes to five hours. It can be seen in chart 2 that 82 per cent had a rise in temperature within the first 30 minutes. In most instances this will increase during the surgical procedure if cooling is not used.

RELATION TO TYPE OF SURGERY

As our thermo-electric thermometer was set up in only one of the operating rooms, the cases studied were rather selective. There were 154 cases, including great vessel surgery, anastomosis of the aorta and pulmonary arteries, division of patent ductus and excision of coarctation of the aorta. In 55 of these cases there was either no cooling or only ice bags about the patient after the temperature began to rise. In this group 41 (74.5 per cent) had fever above 100 F. Of the 11 patients who were packed in ice bags during the whole operation, six (54.5 per cent) had a temperature above 100 F. Of the 88 cases in which the cold water mattress was used, 37 (43.2 per cent) had some fever.

There were 11 cases of primary or secondary surgery of tracheo-esophageal fistulas. As would be expected when considering the age of these patients, only one suffered a temperature above 100 F. Mediastinal tumors and lobectomies made up 10 cases. Of the six patients without cooling, four suffered some fever, while the four who were cooled with the mattress maintained temperatures within normal limits.

Seventeen abdominal surgery cases included bowel surgery, abdominal and kidney tumors and bile duct atresia. Eight of 12 patients in the control group and two of five patients in the mattress-cooled group had some fever. There were four patients with inguinal herniorraphies in the noncooled group, all of whom had temperatures above 100 F.

In the control group there were 12 cases of surgery on bones and tendons, with fever in three patients, and one of three patients on whom skin grafts were applied had a fever. Of the remaining 16 miscellaneous patients, all in the control group, only one had fever.

TEMPERATURES AFTER SURGERY

It is always difficult to find the cause of postoperative fever and hence to rationalize on the relationship of temperatures during anesthesia and postoperatively. When no fever was present during anesthesia there was no significant difference in the number of children with fever within 72 hours postoperatively, whether cooled or not cooled. The average for each group was close to 50 per cent. The temperatures were 100 to 101 F. in 74 per cent, 101 to 102 F. in 20 per cent and 102 to 103 F. in 6 per cent.

In the control group of children with fever during anesthesia 77.5 per cent still had fever at the end of surgery, but only 50 per cent continued to have fever for 48 to 72 hours. In the mattress-cooled group the corresponding figures were 37.5 per cent and 42.5 per cent. There is little difference in the effect of cooling during anesthesia with respect to fever 48 to 72 hours postoperatively. Temperatures of over 101 F. were present in 42 per cent of the control group and 34 per cent of the water mattress group. All patients with anesthesia temperatures of 100 F. at the end of surgery had postoperative fever. This was generally higher in the noncooled group—one rising as high as 106 F.

There were 12 deaths in this group of 215 children. Four deaths occurred in cases of congenital tracheo-esophageal fistulas. Two of these were operated on at the age of 3 days (temperature of both being from 97 to 98 F.), one at the age of 4 days (temperature from 93.6 to 95 F.) and one 6 days old (temperature of 94.8 and 96 F.). All were in the control group; all had pulmonary infection before surgery, and all died shortly after the operation except one patient who died on the fourth day. Seven deaths occurred in the group with congenital malformations of the heart and one in the group with a double aortic arch. The temperatures were 91.8 to 95.6 F., age 7 months; 92 to 100 F., age 3 months; 92.8 to 94.6 F., age 6 months; 97.4 to 100.6 F., age 1½ years; 98 to 98.2 F., age 2¼ years; 98.4 to 98.6 F., age 2 months and 100 to 100.8 F., age 2 years. The two patients with temperatures over 100 F. were in the control group, and the rest were in the cool water mattress group. All died within 14 hours postoperatively, with the exception of two who lived two and six days respectively. None of these children were good surgical risks, and it was believed that the temperature during surgery had nothing to do with their deaths.

The postoperative course of the mattress group was generally better than that of the control group. All four patients with prolonged and unexplained fever were in the control group having fever during anesthesia. Major postoperative complications were about equally divided between the two groups and were usually related to the preoperative condition or to the immediate surgery. Major postoperative pulmonary infection occurred with approximately the same frequency whether or not the children were cooled during surgery. However, this series is too small to have statistical value on this point.

ANESTHETIST AND SURGEON

It is the opinion of both the technician anesthetists and the physician anesthetists who administer the anesthesia at The Children's Memorial Hospital that appreciably less anesthetic agent is required when the temperatures are subnormal. During surgery on "blue babies" subnormal temperatures seem to have a beneficial effect on the heart action. Exploratory operations on "blue babies" in which no anastomosis was possible had a mortality of 54.4 per cent in the uncooled group and a mortality of 14.4 per cent in the cooled group. Although the total number of these exploratory operations was only 18, the 40 per cent difference in mortality is probably significant.

The surgeons doing most of the operations have become very dependent on the information and control offered by the thermo-electric thermometer. Respirations and heart action are slower, and there is not as much perspiration and fluid loss. Hyperthermia can easily be recognized and controlled.

COMMENT

What the optimal temperature during surgery should be requires more study. From our own experience we feel that subnormal temperatures of between 95 and 97 F. are very satisfactory in selected cases. Burstein and Mark [3] state that without a temperature above normal the respiratory efforts remain effortless and of normal pattern. There is less laryngeal spasm, sweating is abolished and the pulse and blood pressure tend to remain normal. Crossman and Allen,[4] in writing on the treatment of shock by the reduction of body temperature, state that this causes a reduction of exudation and probably of toxin formation, a more liberal blood supply to the vital organs by constriction of the peripheral vessels and relief of anoxia by reduction of total metabolism. Temple Fay, in discussing the above paper, states that temperatures of 92 to 94 F. can be maintained for several days without ill effect. As body temperature is reduced to subnormal, more oxygen is had in solution in the blood, body tissue fluids and the cells themselves. Cellular metabolism is reduced, and therefore less oxygen is required. It has been found that for every degree of temperature change there is a change in metabolism of 7 per cent.

In reporting his experiments on the effects of hyperthermia and hypothermia in dogs, Prec et al.[5] reports that in the former there is increased oxygen consumption, reduced cardiac output and increased arteriovenous oxygen differential. The heart rate is increased, and the right auricular pressure falls. There is an increased demand by the tissues and vascular bed for blood. This, coupled with the reduced cardiac output, will lead to collapse unless vasoconstriction occurs. In hypothermia there is a decrease in oxygen consumption, respiratory and cardiac rates, and the blood pressure and the cardiac output fall.

Most of the above observations were true in our patients, as evidenced by less anesthesia, slower pulse and respirations, less perspiration and what appeared to us to be a better recovery period.

CONCLUSIONS

1. Temperatures of infants and children during surgery vary widely and should be carefully watched.
2. Infants under 6 months of age tend to develop subnormal temperatures during surgery, which so far we have not found harmful.
3. Fever during surgery developed in over 62 per cent of the children studied in this series between the ages of 6 months and 13 years when not cooled.
4. A cold water mattress is more efficient than ice bags in preventing fever.
5. Subnormal temperatures seem to be beneficial in certain selected cases.
6. Techniques, presently being perfected, for the simultaneous recording of heart rate, blood pressure, electrocardiograms, electroencephalograms and arterial oxygen saturation should be combined with temperature studies in children to give us added information on the effects of hyperthermia and hypothermia.

4. Crossman, L. W., and Allen, F. M.: Shock and Refrigeration, J. A. M. A. **130**: 185-189 (Jan. 26) 1946.
5. Prec, O.; Rosenman, R.; Braun, K.; Rodbard, S., and Katz, L. N.: The Cardiovascular Effects Of Acutely Induced Hypothermia, J. Clin. Investigation **28**: 293 (March) 1949.

EXPERIMENTAL AND CLINICAL INVESTIGATIONS OF PERIPHERAL NERVE INJURIES OF THE UPPER EXTREMITIES

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Certain fundamental principles in the treatment of peripheral nerve injuries deserve re-emphasis from time to time. It has become a trite thing, but it is true that in the excitement connected with the immediate repair of a lacerated extremity tendons are mistaken for nerves and nerves are mistaken for arteries. The result is that a nerve may be sutured to a tendon or, even more frequently, a severance of the nerve trunk may not be recognized at all.

Early recognition of a peripheral nerve injury is the greatest single prophylactic measure that can be taken to insure a good result after surgical repair of an interruption in the continuity of a nerve trunk. Lesions of the median, ulnar, and radial nerves are the commonest of the injuries to the peripheral nerves in the upper extremities, and to these injuries must be added injuries of the brachial plexus. In general, it must only be kept in mind that an injury to a peripheral nerve produces the characteristic sign of a lower motor neuron lesion: that is, a flaccid paralysis, a loss of deep tendon reflexes and of sensation in all modalities, atrophy of muscles, and a reaction of degeneration on electrical stimulation.

The tests for lesions of the nerves most commonly injured in the upper extremity can be very simple. If a patient does not recognize a pin prick in the palmar surface of the distal two phalanges of the index finger it may be concluded that he has a lesion of the median nerve. If a patient does not recognize a pin prick in the palmar surface of the distal two phalanges of the little finger it may be concluded that he has a lesion of the ulnar nerve. The loss of sensation that follows a radial nerve lesion is so inconstant in the space bounded by the first metacarpal of the index finger and the thumb that it is better to rely on motor tests for the determination of a radial nerve injury. If a patient cannot extend his wrist with the palm flat on the table and drops the hand when the forearm is supported the patient has a lesion of the radial nerve. If the patient cannot make a cone with the tips of all his fingers and his thumb he has a lesion of the ulnar nerve. If a patient cannot make a complete fist by completely flexing the index finger or oppose the tip of the

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Read before the Section on Orthopedic Surgery at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 30, 1950.

thumb to the tip of the index finger it may be concluded that he has a lesion of the median nerve. It must be obvious that if the lesion exists higher in the arm more peripheral muscles will be involved. The atrophy of the interosseous muscles—particularly between the space of the first metacarpal of the index finger and that of the thumb—that gives to the dorsal surface of the hand a skeleton-like appearance, with atrophy of the muscles of the hypothenar eminence, is characteristic of an ulnar nerve lesion. The paralysis and atrophy of the thenar muscles that place the thumb on a plane with the palm of the hand, thus producing an ape-like hand, is characteristic of a median nerve lesion.

The combination of nerves injured in a brachial plexus lesion is multiple. Therefore, it is quite confusing to speak of upper and lower types of brachial plexus injury. It is more accurate and more instructive to determine the muscles paralyzed and the nerves that innervate those muscles and thereby place the lesion accurately among the cords, trunks, or roots making up the brachial plexus.

In the presence of a peripheral nerve injury a second important principle prevails: the sooner the ends of the divided nerve can be united in accurate apposition by the finest suture material and the most meticulous technique possible the more successful will be the surgical end result. The ideal method of treating a divided peripheral nerve is to unite the severed ends directly by suture before neuromas are formed, before retraction has occurred, and before atrophy of muscles, fibrosis, and ankylosis of joints has taken place. It has been shown experimentally that muscle atrophy is less severe and ulceration of the skin less likely to occur if a divided nerve is united immediately after injury. There is abundant histological evidence to show that both in the animal and in the human regeneration is more perfect if the nerve ends are united before neuromas have occurred.

In my opinion it is better to unite divided nerve ends even in what may be considered a potentially infected wound than it is to leave the nerve ends disunited and allow neuromas to form and retraction to occur. Obviously, when neuromas form they must be resected with a loss of substance to the nerve trunk, thereby increasing the difficulty in bridging the gap between the divided ends of the nerve. Any nerve that is sutured under tension and in which stretching is necessary does not regenerate as successfully as one in which these conditions do not exist. With the advent of antibiotics there is no question in my mind that nerve ends should be sutured immediately, even though the wound may be potentially infected, provided careful debridement and mechanical cleansing of the wound is employed in the operating room in addition to the use of the antibiotic. It has been learned from experimental investigation that the local use of the sulfonamides does not interfere with the regeneration of a peripheral nerve. This does not mean that the local use of sulfonamides is superior to their systemic administration or to other antibiotics, but that if in the opinion of the surgeon the local use of sulfonamides is indicated he can be reassured that the resulting reaction in the tissues about the nerve will not handicap the regeneration of nerve fibers in the sutured nerve.

In certain conditions the repair of the nerve injury is of secondary importance to the overall treatment of the patient. A compound comminuted fracture of the humerus associated with a lesion of the radial nerve should be treated simultaneously with the peripheral nerve injury; but in such a condition, depending on the circumstances, the treatment of the nerve injury could be deliberately delayed. A large gap in continuity of a peripheral nerve must be classified and treated as a delayed peripheral nerve repair. If immediate end-to-end suture is not possible because of loss of nerve substance it is advisable to identify the proximal and distal nerve ends and anchor them as closely together as possible to surrounding muscle, fascia, or tendons by wire sutures. Thus they will be more easily found when definite repair of the nerve gap is undertaken. However, to deliberately delay the repair of a peripheral nerve injury in a clean lacerated wound without loss of nerve substance, even with the knowledge that the wound may become infected, is believed to be absolutely wrong.

It has been shown experimentally that every nerve injury is accompanied by a traumatic zone of degeneration. The result of this trauma causes the endoneurium to proliferate in the end of the central segment and to produce a disorganization in the usual pattern of nerve fiber degeneration. Traumatic degeneration and regeneration differ from wallerian degeneration and the following regeneration that occur when the nerve is separated from its cell of origin. An understanding of the simple mechanism of degeneration and regeneration and the microscopic changes that occur in a peripheral nerve fiber should prevent the repetition of certain practices doomed to failure and should be of great help to any surgeon who attempts to repair a peripheral nerve. It will make it obvious that the nerve should be handled with meticulous care and should be sutured with the finest material and needles available; that the sutures should always be placed through the epineurium of the nerve and not through the nerve trunk as a whole; that accurate apposition of the fascicles observed in the cross-sections should be attempted in order to restore the original pattern; that the passage of a metallic wire through a nerve trunk can only result in further degenerative products and in an obstruction to the regeneration of nerve fibers, and that the wrapping of the suture line with a metallic substance only interferes with the regeneration of nerve fibers because it prevents the ingrowth of blood vessels that help in the evacuation of decomposition products and the regeneration of nerve fibers. It may be concluded that, in my opinion, the use of metallic wire as stay sutures or as tension sutures or to unite divided nerve ends is not beneficial, and the wrapping of a suture line with any metallic substance is contraindicated.

The fourth principle deals with the treatment of what is usually called irreparable nerve lesion. If the severed nerve ends cannot be united because of a large gap in the continuity of the nerve trunk and if, therefore, end-to-end suture is not possible, other surgical procedures are available to insure a good result. It has been proved clinically and experimentally that nerve injuries produced by a stretch mechanism may be just as damaging as the direct severance of continuity by a sharp instrument. This is particularly true of brachial plexus injuries. Why, then, should a peripheral nerve be expected to regenerate if, in order to bridge a large gap, the nerve is stretched by

the movements of joints adjacent to the site of injury? As a matter of fact, what is there to stretch in a nerve trunk? Nothing stretches; but structures rupture, and more degeneration results. Furthermore, it has been shown that ischemic necrosis of nerve fibers is caused by wide denudation of the nerve necessary for mobilization and may result in more extensive degeneration and delayed regeneration. To effect any result in a peripheral nerve injury in which there is a loss of substance such that an end-to-end apposition cannot be obtained, the following four possibilities may be considered: (a) the use of an autogenous graft; (b) the use of homogenous graft; (c) the shortening of the limb, and (d) the fixation of joints and the transposition of tendons of uninjured muscles. There is sufficient evidence available, both in experimental laboratories and the human patient, that autogenous grafts made of nerves of similar size to the injured nerve may be successful. Published and unpublished records of peripheral nerve patients show evidence of good functional results after the implantation of autografts. For accurate evaluation of the results it is of utmost importance that the patients be tested by the most exacting tests for determining the regeneration and recovery of a peripheral nerve injury, such as the movement of muscles innervated solely by the injured nerve and the return of pin prick sensation in the isolated area of supply to pin prick of the injured nerve. In my opinion, the use of multiple pieces of nerve graft of smaller caliber than the injured nerve—the so-called cable graft—is less successful in the human patient.

The opportunity to evaluate the use of fresh homogenous graft was lost during World War II when, in amputation and peripheral nerve centers, portions of the nerves of amputated extremities of one person were not used to repair large defects in the continuity of a peripheral nerve in another. A few such operations were carried out, but the results were evaluated after only six months, a time too short to even judge the return of function in a peripheral nerve injury that has been repaired by an end-to-end apposition. The use of autogenous and homogenous grafts have been studied experimentally, suturing a graft into place with fine silk or using the plasma clot technique. It should be mentioned that functionally and microscopically there appeared to be no advantage in using the plasma clot technique in preference to the silk suture method, except perhaps in those cases in which a very small nerve such as a digital nerve is injured and in which no tension in the suture line is present. Dr. Loyal Davis and I have used homogenous nerve grafts on patients followed six months to several years. The grafts were taken from the sciatic nerves of recently amputated extremities or from cadavers soon after death. The functional recovery after the use of homogenous nerve graft in man is distinctly inferior to that obtained under experimental conditions in animals. In all fairness, however, it must be stated that the delay of months or years before grafts were transplanted in all of these cases allowed the muscles to become severely atrophied and contracted, greatly limiting their recovery of function. Experience with homogenous grafts in man has shown that while the functional recovery is minimal and does not compare with that obtained with the use of autogenous grafts, the nerve grafts are not absorbed and are not reduced to fibrous bands.

In certain circumstances, such as fresh comminuted fractures, resection of one or two inches of the humerus has permitted successful end-to-end suture of severely injured nerves without handicapping the patients too severely. In long-delayed cases this method may be the only means of performing an end-to-end nerve suture and should be thought of when several nerves are involved. In the repair of brachial plexus injury resection of a segment or even the entire clavicle helps complete visualization of the plexus and is necessary for the end-to-end suture of the usually-retracted severed nerve segments.

Finally, there are those irreparable nerve injuries in which the nerve ends cannot be apposed and any type of graft is unsuccessful. In these the best possible method of obtaining the greatest amount of function in the affected extremity is the transplantation of tendons and the fixation of joints. As a matter of fact, I am inclined to have tendon transplantations performed after most high injuries of the radial, ulnar, and median nerves and in patients seen a year or several years after injury as an aid to functional recovery after nerve suture. This procedure helps to keep the joints from becoming ankylosed and the muscles contracted or overstretched. Hand and fingers are also kept in a better position of function.

Traumatic lesions that involve parts of the brachial plexus are not uncommon in civilian or military life. They may be the result of penetrating stab or bullet wounds or more commonly are produced by blunt trauma on the side of the neck with the head flexed far to the opposite side and the shoulder depressed. The chief factor is overstretching and traction on one or more components of the plexus produced by any means that force the head and the shoulder apart. The overstretched nerves may rupture at any point from the origin of the roots from the spinal cord to the most distal part of the plexus. Therefore, some fibers may be avulsed, others torn apart within the nerve trunks, and others overstretched. The resulting clinical symptoms are those of complete and incomplete anatomic or physiological lesions that cannot and should not be catalogued according to the early classification of brachial plexus injuries into the upper (Erb) or lower (Klumpke) types. I believe it is far more accurate and practical to determine the extent of the paralysis by careful, detailed examinations of the muscles and then place the level of the lesion by a knowledge of the innervation of those muscles. The progress of recovery could be followed more easily, and a final evaluation of the residual lesion could be made accurately.

The results of the surgical treatment of brachial plexus lesions are, on the whole, not as good as those of peripheral nerves. The distance between the site of the lesion and the muscles and skin involved makes nerve regeneration a slow and prolonged process. Therefore, the end results should not be evaluated finally for several years after repair. It is also obvious that neurolysis and nerve suture performed on the plexus cannot be done as extensively and accurately as on a single peripheral nerve trunk.

The contribution of Pollock and his associates—the question of electrodiagnosis in peripheral nerve injuries applied to the study of recovery before and after surgical repair—cannot be overemphasized, as the electrical signs of recovery antedate the recovery of motion and sensation by many weeks. When a sufficient time after injury has elapsed to permit the development of a state of denervation and the characteristics of denervation are not found by electrodiagnosis, then the nerve may be said to be spontaneously recovering and should not be operated on. Likewise, if after suture of a severed nerve the characteristics of the denervated state are not found it may be assumed with certainty that recovery is taking place. On the other hand, when sufficient time has elapsed after nerve injury for regeneration to have occurred and the characteristics of denervation are found, then the nerve must be operated on.

Finally, the most important principle that affects the results of peripheral nerve surgery and is not sufficiently emphasized is that principle that stresses every effort to keep the effector mechanism in a state in which it may function. It is of little avail to have a perfect microscopic regeneration of a peripheral nerve trunk if the muscles are so atrophied and fibrosed and the joints so fibrosed and ankylosed that they will not move. Such a peripheral nerve suture may be classified as a failure and yet regeneration within the nerve trunk may be perfect. Consequently, the intensive use of physical therapy and all of its adjuncts, electrical stimulation, massage, active and passive movements, and use of proper splinting of the paralyzed extremity or portion of the extremity into a position of relaxation of the paralyzed muscle and of function of the limb is of great importance and cannot be overemphasized. Yet it is one of the factors in peripheral nerve surgery that is most often neglected.

ABSTRACT OF DISCUSSION

Dr. Loyal Davis, Chicago: In the past emphasis has been placed on the wrong factor in discussing the repair of peripheral nerve injuries. Everyone has been talking as to whether the nerve will regenerate. Nerves regenerate any time, any place, when the two ends are in apposition; as a matter of fact, it is rather difficult, experimentally, to keep a nerve from regenerating.

The important thing, therefore, is what Dr. Perret spoke about: that is the care of the effector mechanism. I consider his judgment on the matter to be sound. One cannot expect a hand, finger, or a foot to function if the muscles are atrophied, if the joints are fibrosed or ankylosed, or if the muscles are shortened because it has been allowed to stay in a malposition from the time the nerve was injured.

More attention should be paid to keeping the muscles and joints in condition by all types of physical therapy and electrotherapy so that, when the nerve does regenerate the effector mechanism can work. This explains, in many instances, the failure to accomplish good results after a nerve has been sutured.

Time is an essential factor in the results to be obtained with peripheral nerve surgery. Nerve ends should be sutured and apposed as quickly as possible after the nerve has been divided. I am in complete disagreement with anyone who deliberately delays the apposition of nerve ends.

I am quite aware of those instances in which a nerve cannot be sutured because of the destruction of the nerve, or because of other factors that involve fractures of bones in which the nerve suture must be necessarily delayed because of the circumstances.

But recently it has been stated that the way to get a good result in peripheral nerve surgery is to delay deliberately the union of the nerve. There is not a man in this room who, if when he walked out of the room happened to put his hand through the window and cut his wrist, severing his median nerve, would not want that median nerve sutured promptly.

There are many false ideas about being able to get a nerve together by flexing adjacent joints or extending them, in either case stretching the nerve. As Dr. Perret pointed out, there are great changes in the nerve microscopically, and there is a traumatic degeneration produced in a nerve by stretching that can be shown histologically. All the nerve sutures that were performed during the last war, with a leg in flexion or an arm in flexion and were then stretched out are proving, on follow-up studies, to be absolutely useless.

There arises, then, the question as to how to repair a nerve injury in which there has been large destruction of tissue. Autogenous grafts, in my opinion, are the best method of accomplishing this, but, that is often impossible. It is my opinion that cable autogenous grafts are not particularly effective.

The use of homogenous grafts is still an open question. Physicians missed the opportunity during World War II, when there were amputation centers and peripheral nerve centers in the same hospital, to prove the point whether a fresh homogenous graft would be successful in repairing a large gap in nerve tissue.

There are peripheral nerve injuries that are irreparable as far as repairing the nerve is concerned. Physicians must take advantage of all the operations that have been devised for fixing joints, for shortening tendons, and for placing the hand in the position of function so that the best possible functional results may be obtained.

Dr. Sterling Bunnell, San Francisco: Primary nerve sutures, if properly carried out, give the best results; but if performed by the usual technique, the nerves should be sutured again as soon as the limb is in condition for this. If conditions are not right for primary suture, such as in wounds with crushing and contamination, one stainless steel stitch should be placed to hold the nerve ends together, and a perfect neurorrhaphy should be performed as soon as the wounds have healed.

Similarly, if the wound becomes infected the nerve should be sutured again as soon as possible, because the degree of regeneration is in direct proportion to the accuracy of the union. The union cannot be perfect if done crudely or in the presence of infection.

The urgency of repairing nerves early, before irreversible degeneration and atrophy occur in their distal fragments and in the muscles, should be emphasized even more. Perfect nerve juncture should be accomplished as early as possible. Much muscular damage might well result if two years are allowed to elapse.

Too often attention is given to the fracture or the joint at the neglect of the nerves until too late, but arm nerves and the brachial plexus are hand nerves. Injury of them wrecks the hand, and the hand is the important part of the upper extremity. Therefore, the repair of nerves should have priority; they should be repaired at the time of setting the fracture, or before.

This is so important that, if necessary to get the nerve ends together, the arm should be bent at the fracture, or an ankylosed elbow should be broken up and flexed, so joining the nerve ends will be possible. The bones and the joints that are of lesser importance can be treated later.

Tantalum foil should never be used, and nerve homografts are not of practical value. Autogenous grafts are successful if the grafts are narrow enough to be thoroughly nourished.

This principle applies to any type of graft, nerve or otherwise. This is also why a several-strand cable graft, if properly sutured, is preferable to a single thick-nerve graft. The matter of fastening those cable grafts is a simple matter of technique; they then work beautifully.

The author mentions four ways of overcoming gaps in nerves but does not include the method of freeing the nerves liberally, flexing the joints, and transplanting the nerves so they will span the joints. This point of view was taken because of fear of stretching the nerve when the limb is again extended.

The above principle has been the chief method that I have used in repairing well over 1,000 nerves, and it is successful. A full month is allowed for the nerve juncture to become sufficiently strong.

Then, twice a week, the joints are carefully extended, a little at a time and always short of discomfort. This extension is not done rigidly by turnbuckle or by a series of casts, as this would place the nerve on a stretch. A stretch means either rupture of

fibers or ischemia. Ischemia of a nerve is followed by necrosis. To avoid either of these time is given for the nerve to grow longer, not to be stretched longer.

We use the snub method; that is, the degree of each successive extension is snubbed by the splint, but the joints are always free to flex and so ease the tension. This relieves any discomfort from nerves rendered ischemic by overpull. By these methods gaps of up to five inches may be overcome in any of the three main nerves of the arm and four inches in the brachial plexus.

When arm nerves are paralyzed constant attention should be given to the hand to keep the joints supple and in position of function. Sinusoidal exercise helps. The patient should be instructed to keep the joints of the hand in good condition by moving them gently with his other hand. The paralyzed muscles should never be overstretched.

It is not necessary to splint the hand so that the paralyzed muscles are fully relaxed, as was done in World War I and in the beginning of World War II. This rigid and over-splinting will do much damage. All that is necessary is to provide some light, springy, or elastic splint that will exactly counterbalance the muscle imbalance, and no more, so the hand will remain in the position of function. The patient can then engage in occupational therapy and, by using the hand, will keep it in condition until the nerves regenerate.

DR. PERRET, Iowa City: I wish to thank Drs. Davis and Bunnell for their expert discussions. I do not have much to add, as we seem to agree fundamentally. In our experience infected wounds can be sterilized without too much trouble with adequate debridement and with the local and systemic use of today's antibiotics. Thus we have been able to successfully repair nerves in grossly infected wounds that were cleaned out thoroughly and closed tight primarily and which healed without complications.

CLINICAL NOTES

MERCURY LOST IN THE GASTROINTESTINAL TRACT

REPORT OF AN UNUSUAL CASE

Meyer O. Cantor, M.D., Detroit

Since the trend toward mercury-bearing intestinal decompression tubes developed, the innocuousness of the liquid metallic mercury in the gastrointestinal tract again has been observed.[1] A review of the literature upon the subject of bowel obstruction and the role of mercury in its treatment reveals numerous articles beginning with 1676 and appearing until approximately 1850. In these articles many case reports were found extolling the curative effect of liquid mercury in the treatment of bowel obstruction.[2] Judging from the extensive literature that accumulated on this subject during these early years, it would seem that numerous therapeutic properties were ascribed to metallic mercury in overcoming bowel obstruction. These were believed to occur by virtue of the fluidity and weight of this heavy metal, which was supposed literally to force its way through the obstructing process. This form of treatment fell into disrepute about the middle of the 19th century as a result of the observation of Dujardin-Beaumetz[3] that the mercury did not pass down the gastrointestinal tract en masse but became finely divided into small particles which could not exert any pressure effect upon the obstructive process. Despite the fact that the use of mercury fell into disrepute in the treatment of bowel obstruction, a useful objective was obtained. The extensive use of this heavy metal had called attention to its usefulness in the treatment of bowel obstruction, and this paved the way for its subsequent introduction into the end of a tube. In addition, the innocuousness of the mercury when free in the gastrointestinal tract was shown.

In the past two years case reports have appeared describing pathological processes as a result of the presence of this free mercury. Birnbaum[4] reported the development of acute appendicitis as a result of the presence of mercury globules in the appendix. Hoffman,[5] on the other hand, reported the presence within an appendix removed at operation of free metallic mercury which had produced no inflammatory change at all. Lindemuth[6] recently reported a persistent rectal fistula caused by leakage of mercury from an intestinal tube. In this case, healing of the fistula did not occur until the tract and all the mercury in its wall had been excised. It appeared that the metallic mercury acted as a foreign body preventing the spontaneous closure of the fistulous tract. Lindemuth further quoted Chodoff, who reported the escape of metallic mercury from a tube following right colectomy and illeotransversecolostomy. In this case, three intestinal fistulas developed proximal to the anastomosis. At autopsy these fistulas were shown to have adjacent abscesses, each of which contained metallic mercury.

The case report herein presented is rather unusual for two reasons: First, it presents for the first time radiological confirmation of the accuracy of the observation of Dujardin-Beaumetz, and, second, it demonstrates that persistence of fistulous tracts is not the rule as a result of a leakage of mercury.

REPORT OF CASE

A. F., a 35-year-old woman, was admitted to the North Detroit general hospital for treatment of a tubo-ovarian abscess. As a result of the surgical treatment, the colon at the rectosigmoid was opened. The rent in the colon was closed in two layers. The patient had received massive doses of penicillin, phthalylsulfathiazole, and streptomycin prior to and after operation. Despite this, pelvic peritonitis developed. This was then followed by the development of four fecal fistulous tracts in the next four weeks. One fistulous tract opened over McBurney's area; one tract opened below the umbilicus; one opened above the pubis, and one opened in the vaginal vault. During the time that the pelvic peritonitis was being treated, a mercury-bearing intestinal decompression tube was passed to treat the paralytic ileus that resulted from the intra-abdominal inflammatory process. Eight cubic centimeters of mercury had been used in the balloon. The balloon was improperly tied off. This resulted in all the mercury escaping within the gastrointestinal tract. Figure 1 shows well the escape of the free mercury within the gastro-

From Grace Hospital.

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4. Birnbaum, W.: Inflammation of the Vermiform Appendix by Metallic Mercury, Am. J. Surg. **74**:494-496 (Oct.) 1947.

5. Hoffman, I. L.: Spontaneous Evacuation of Metallic Mercury from Vermiform Appendix, Bull. U. S. Army M. Dept. **8**:802-803, 1948.

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intestinal tract. In this figure one notices large masses of metallic mercury. Seven days later, roentgenograms showed the mercury to be finely divided into particles which beautifully outlined the entire colon as effectively as though barium sulfate had been given. Only two small masses of mercury remained intact. Figure 2 shows the fine dispersion of the mercury within

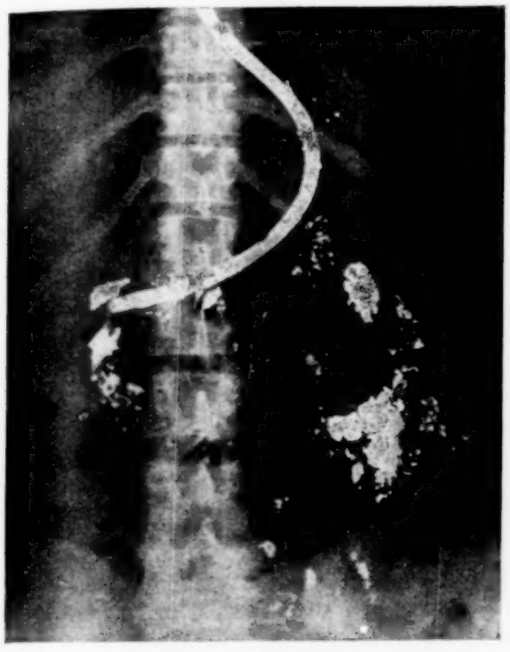

Fig. 1.—Masses of metallic mercury resulting from leakage of 8 cc. of metallic mercury from the balloon of an intestinal tube.

the colon. A barium enema showed, as seen in figure 2, that there was complete obstruction at the rectosigmoid. The fistulous tracts began just above the point of obstruction, exactly at the spot at which the dispersion particles of mercury and the barium

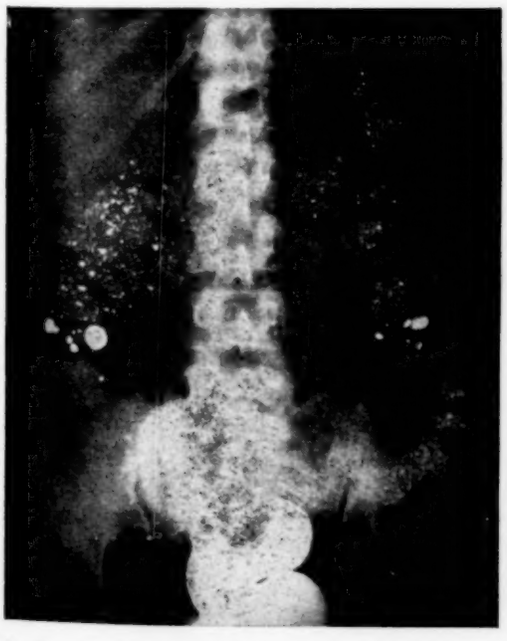

Fig. 2.—Fine dispersion of metallic mercury particles in the right, middle, and left colon. Barium enema shows obstruction at rectosigmoid.

met. On the 20th day, in order to be certain that the fistulous tracts had their origin at the rectosigmoid, a radiopaque catheter was passed through one of the fistulous tracts, and 100 cc. of a very dilute barium suspension was injected. Figure 3 shows well that the entire right, middle, and left colon up to the rectosigmoid were visualized. Below the rectosigmoid there was no visualization because of the colonic obstruction at this point. One notices that, in figure 3, only a very small amount of metallic mercury remained. From its position, it would appear that this small amount of mercury had found its way through the vaginal fistulous tract and through the tract in McBurney's area. During the course of these four weeks globules of mercury were excreted through the fistulous tracts from time to time. On the 22d day after figure 1 was taken a defunctionizing colostomy was done to divert the fecal stream. As a result, the fistulous tracts began to close within a week. In two months all four tracts had completely closed.

SUMMARY

This case report presents radiological confirmation of the accuracy of the observation of Dujardin-Beaumetz almost 100 years ago. The mercury was so finely divided that it delineated the entire colon almost as well as barium. Four fistulous tracts developed as a result of injury to the colon. Metallic mercury was excreted through these tracts. Defunctionizing colostomy resulted in a rapid closure of these tracts. At the end of two months the closure of all four tracts was complete.

Fig. 3.—Radiopaque catheter inserted into one fistulous tract, and dilute barium injected. Note small amount of metallic mercury remaining in pelvis and in right lower quadrant. This film was taken 20 days after figure 1.

CONCLUSIONS

A roentgenological presentation of the dispersion of metallic mercury within the gastrointestinal tract is given. Such fistulous tracts do not necessarily remain persistent because of the presence of metallic mercury within the bowel. For persistence of fistulous tracts to occur, the mercury must become trapped within the tract and there act as a foreign body.

666 Maccabees Building.

The First Great Pyramid.—Imhotep was the Grand Vizier, Chief Justice, and Physician to King Zozer, and as a side-line he was also architect of the first great Pyramid at Sakkara. He was the first great man combining the sciences of law and medicine; he might, if you wish, be described as the first medicolegal expert. Unfortunately Imhotep became a god, and it is one of the weakness of Egyptian medicine that the methods of treatment became largely empirical and irrational through the influence of tradition, heavily overlaid with an aura of divinity and magic.—Sir Sydney Smith, the History and Development of Forensic Medicine, *British Medical Journal*, March 24, 1951.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. . . . . CHICAGO 10, ILL.
Edited by . . . . . AUSTIN SMITH, M.D.
Associate Editor . . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . . "Medic, Chicago"

NURSING HOMES

Nursing homes have had an unprecedented growth in the past 10 years. This growth has been in response to an urgent need. Although the need probably has always existed, the demand for nursing home care was greatly increased by the Old Age Assistance Program in 1935, which made it possible to grant federal and state assistance to the aged in their own homes or in private institutions such as nursing homes. Other important factors have been the increase in the number of older persons, the shortage of general hospital beds, the general housing shortage since World War II, and the lack of other facilities for the chronically ill and for the homeless aged.

Nursing homes now provide a variety of types of care. These include substitute home or boarding home care, convalescent care, care for the aged and for the chronically ill. The services required vary from minimal help to an ambulant infirm aged person to continuous nursing care for patients bedridden because of chronic disease.

The Commission on Chronic Illness [1] reports that it is becoming more apparent that nursing homes should not remain isolated units, but should be brought into a comprehensive chronic illness program serving the community. They need the help of medical societies and other community organizations to use community services and affiliate with hospitals to bring more medical care, rehabilitation, and a fuller social life to their patients.

This can be done through such methods as the establishment of a central information service for the chronically ill in the community; contacts with community agencies and churches, and the development of a direct connection between nursing homes and hospitals, with hospitals providing guidance, consultation, and special services as needed.

The essential role of nursing homes in a well-rounded community plan for the care of the chronically ill should be recognized. Community efforts should be directed to the establishment and maintenance of good standards of care and, since most nursing homes are commercial enterprises, fee scales that will keep these facilities within the financial reach of all who need them and at the same time provide the nursing home operators with a reasonable financial return.

Licensing of nursing homes can be a positive force—and a help to all—if it is based on practical, desirable and realistic standards. There should be licensing or accrediting laws in all the states, and these laws should be administered with the objective of giving services to the operators, the patients, and the public. A powerful incentive to the passage and administration of such laws is contained in Public Law 734, 81st Congress, which amends the Social Security Act to require, beginning July 1, 1953, that, if payments of old age assistance, aid to the blind, and aid to the permanently and totally disabled are made to persons in public or private institutions, federal funds will be available only if there is a "State authority or authorities . . . responsible for establishing and maintaining standards for such institutions."

The funds to pay for reasonable costs of care in nursing homes must be made available. State and local departments of welfare must be concerned with providing sufficient funds to insure at least minimum standards of good care for the indigent chronically sick. It seems paradoxical that that portion of the sick population least able to pay for care—the chronically ill—should be left largely unprovided for by community-supported institutions and programs. Nevertheless, private nursing homes have developed in response to a need which was not otherwise being met. It is reasonable to suppose that there will always be a place for private nursing homes which offer good services at a reasonable cost. In the recently published study of the needs of terminal cancer patients made by the Chicago Central Service for the Chronically Ill,[2] it is revealed that, in those cases in which significant amounts of help must be employed for the care of the patient, the cost of care at home is greater than the cost in facilities such as nursing homes.

The function of the nursing home, and of all institutions and agencies providing services to the chronically ill, is not only to give care but to see that patients are physically or vocationally rehabilitated if possible.

Good and continuous medical supervision is essential for the chronically ill, just as for all others who are ill. When it is necessary for patients to move to and from the nursing home and the hospital or to his own home, continuity of medical supervision cannot always be assured. Although consultation and specialist services may be needed from time to time through the course of his illness, the patient should have one physician to whom he can look for guidance on continuing care. Medical societies can work with nursing homes, community agencies and hospitals to develop medical-social programs that would be aimed at preventing gaps in medical service for patients whose requirements for care result in frequent moves from hospital, to home, to nursing home—and from nursing home to nursing home.

A growing awareness of these and other problems of chronic illness is reflected in recent reports on chronic illness activities by medical societies in 20 states. Cooperation with community groups and nursing home operators could be an important field of action for the medical society chronic illness committees that have been already established, and the many new committees that will be formed as guidance and leadership by the medical profession is provided in the development of better care for the chronically ill.

1. Levin, M. L.: Nursing Homes—Their Part in the Community's Attack on Chronic Illness, Chronic Illness News Letter vol. 2, no. 2 (Feb.) 1951.

2. Terminal Care for Cancer Patients, Chicago, The Central Service for the Chronically Ill of The Institute of Medicine of Chicago, 1950. p. 4.

AUREOMYCIN AND ANTACIDS

Aureomycin, the yellow antibiotic substance produced by the actinomycete Streptomyces aureofaciens, has had extensive clinical use since its discovery by Duggar in 1948.[1] It has a wide spectrum of chemotherapeutic activity, and its use is accompanied by a relative lack of harmful effects. Aureomycin is effective not only against many gram-positive and gram-negative bacteria, including penicillin-resistant and streptomycin-resistant strains, but also against Rickettsia and certain viruses. Furthermore, organisms show little tendency to develop resistance to aureomycin.

Intramuscular injection of aureomycin results in local irritation, unpredictable blood levels and unsatisfactory therapeutic results.[2] Oral administration results in satisfactory therapeutic results but is accompanied by high incidence of gastrointestinal upsets, including loss of appetite, nausea, vomiting and epigastric pain. Effects directed toward reduction of these gastrointestinal upsets include the use of more purified preparations and administration with adjuncts such as gastric antacids and milk. The effectiveness of an aluminum hydroxide gel preparation in relieving aureomycin-induced nausea was first reported by Schoenbach, Bryer and Long [3] in 1948, but at this time techniques were not available for studying the effect of this antacid on the aureomycin blood level. The following year, Di Gangi and Rogers, using both colorimetric and bacteriologic assay methods, showed that aureomycin in vitro was adsorbed onto aluminum hydroxide gel.[4] At the same time, Waisbren and Hueckel [5] studied the effect of aluminum hydroxide gel on the aureomycin blood levels of six normal male subjects and five hospitalized patients receiving 500 mg. of aureomycin every six hours. When approximately 30 cc. of aluminum hydroxide gel was administered immediately after each dose of aureomycin, the blood levels of aureomycin in 10 of the subjects fell from an average of about 5 micrograms per milliliter to less than 1 microgram per milliliter. One of the 10 patients suffered a recurrence of a urinary tract infection with the combined treatment, which promptly subsided when administration of aluminum hydroxide was discontinued. Confirmatory evidence that aluminum hydroxide gel may interfere with the absorption of aureomycin from the gastrointestinal tract is provided by the reports of Seed and Wilson [6]; Boger, Matteucci, Beatty and Baganz [7]; Bartholomew and Nichols [8]; Michel, Sayer and Kirby [9]; Greenspan, MacLean, Milzer and Necheles,[10] and Williams and Weekes.[11] On the other hand, Bartholomew and Nichols showed that the administration of milk with aureomycin reduced the incidence of gastrointestinal irritation and vomiting without lowering aureomycin plasma levels. In addition, Greenspan and his co-workers showed that the polycarboxylic acid antacid, sodium carboxymethyl cellulose, did not adsorb aureomycin in vitro or interfere with absorption of the antibiotic from the intestine, while the report of Williams and Weekes indicates that mucin-aluminum hydroxide-magnesium trisilicate reduces the nausea and vomiting incident to aureomycin administration without lowering the blood level of the drug.

It would thus appear that antacid therapy and systemic aureomycin therapy may be undertaken simultaneously, provided it is known that the antacid used does not affect the serum levels of the aureomycin. For gastrointestinal infections, administration with an adsorbing antacid might result in higher or more prolonged local concentrations of the drug. In many instances, however, the use of milk appears to be a simple, cheap and effective method of reducing the incidence of gastrointestinal upsets accompanying aureomycin therapy without interfering with the absorption of the drug from the gastrointestinal tract.

POSTGRADUATE CONTINUATION COURSES FOR PHYSICIANS

The semiannual listing of postgraduate continuation courses for physicians, covering the period July 1 to Jan. 15, 1952, appears elsewhere in this issue. These data prepared as a regular service by the Council on Medical Education and Hospitals list 873 courses varying in length from a few days to several months. Some are concentrated full time courses and others are part time. There are opportunities for the physician in general practice as well as the specialist. In addition, a series of courses for military personnel at medical installations are included. Courses are being given in 32 states and in the District of Columbia. The subjects embrace 46 major areas in the field of clinical medicine and the basic sciences. Noteworthy among the courses listed are the opportunities offered for the physician in general practice. Medical schools, state medical societies, hospitals, state and city boards of health, and special societies continue to be active in developing this type of continuation training.

One hundred and seven agencies are participating in sponsoring the courses in this listing, including 37 medical schools, 17 special medical societies, 13 hospitals, 12 graduate schools of medicine and graduate assemblies, 7 state chapters of the American Academy of General

1. Duggar, B. M.: Aureomycin: A Product of the Continuing Search for New Antibiotics, Ann. New York Acad. Sc. **51**: 177 (Nov. 30) 1948.

2. Gocke, T. M.; Wells, E. B.; Collins, H. S., and Finland, M.: Blood Levels and Urinary Excretion of Aureomycin After Intravenous and Intramuscular Administration, J. Lab. & Clin. Med. **36**: 100 (July) 1950.

3. Schoenbach, E. B.; Bryer, M. S., and Long, P. H.: The Pharmacology and Clinical Trial of Aureomycin: A Preliminary Report, Ann. New York Acad. Sc. **51**: 267 (Nov. 30) 1948.

4. Di Gangi, F. E., and Rogers, C. H.: Adsorption Studies of Aureomycin Hydrochloride on Aluminum Hydroxide Gel, J. Am. Pharm. A. (Scient. Ed.) **38**: 646 (Dec.) 1949.

5. Waisbren, B. A., and Hueckel, J. S.: Reduced Absorption of Aureomycin Caused by Aluminum Hydroxide Gel, Proc. Soc. Exper. Biol. & Med. **73**: 73 (Jan.) 1950.

6. Seed, J. C., and Wilson, C. E.: The Effect of Aluminum Hydroxide on Serum Aureomycin Concentrations After Simultaneous Oral Administration, Bull. Johns Hopkins Hosp. **86**: 415 (June) 1950.

7. Boger, W. P.; Matteucci, W. V.; Beatty, J. O., and Baganz, H. M.: Aureomycin Plasma Concentrations Influenced by Aluminum Hydroxide, J. Philadelphia Gen. Hosp. **1**: 3 (Jan.) 1950.

8. Bartholomew, L. G., and Nichols, D. R.: Use of Milk to Control Vomiting Caused by Aureomycin, Proc. Staff Meet., Mayo Clin. **25**: 370 (June 21) 1950.

9. Michel, J. C.; Sayer, R. J., and Kirby, W. M. M.: Effect of Food and Antacids on Blood Levels of Aureomycin and Terramycin, J. Lab. & Clin. Med. **36**: 632 (Oct.) 1950.

10. Greenspan, R.; MacLean, H.; Milzer, A., and Necheles, H.: Antacids and Aureomycin, Am. J. Digest. Dis. **18**: 35 (Jan.) 1951.

11. Williams, M. L., and Weekes, D. J.: The Effect of Antacid Preparations on Serum Aureomycin Levels, Rev. Gastroenterol. **18**: 128 (Feb.) 1951.

Practice, 6 schools of public health, 5 state medical societies, 4 county medical societies, 4 government agencies, and 2 health departments.

Institutions offering this type of training are invited to announce such courses in the Council's semiannual listing.

EXAMINATION AND CERTIFICATION OF PROSTITUTES

On two occasions the American Medical Association has declared its position with regard to the medical examination and certification of prostitutes. In 1942 the Association's House of Delegates passed and in 1945 the House reaffirmed the following statement:

> First, that the control of venereal disease requires elimination of commercialized prostitution; second, that medical inspection of prostitutes is untrustworthy, inefficient, gives a false sense of security and fails to prevent the spread of infection; third, that commercialized prostitution is unlawful, and physicians who knowingly examine prostitutes for the purpose of providing them with medical certificates to be used in soliciting are participating in an illegal activity and are violating the principles of accepted professional ethics.[1]

The American Social Hygiene Association, as a result of field studies made during the past two years, has reported to the American Medical Association that, while great progress has been made, there is a small number of physicians in the few cities still tolerating commercialized prostitution who continue periodically to examine prostitutes and provide them with certificates for use in soliciting trade. With military and industrial mobilization for national defense now in progress, it may be desirable to review the reasons that led the American Medical Association to declare such practices unethical.

Prostitution itself and aiding or abetting prostitution are unlawful in all but one state. The physician who examines prostitutes and gives them certificates implying freedom from venereal diseases is a collaborator in an unlawful racket. He aids a business which degrades morals, causes corruption and spreads dangerous infections and which is carried on for profit distributed 20 per cent to the prostitute and 80 per cent to her exploiters. The doctors' fees come out of the 80 per cent assigned to the exploiters.

The fact that the prostitution racket can, in a few places, be carried on apparently under the respectable mantle of medical supervision makes the task of law-enforcement officials more difficult, because physicians appear to be taking responsibility for preventing the spread of venereal diseases by the prostitutes whom they inspect. The general public in such communities is influenced by the example of the physician who examines and certifies the women and girls engaged in prostitution. Citizens assume that, if a doctor examines the "girls on the line," he must consider it right to have a "line" and that, being a doctor, he knows about such things. Local citizens, therefore, may not support or insist on the enforcement of the laws against prostitution.

Prostitutes and their agents want "health cards" for their value in attracting trade. They know ignorant prospective customers will believe that, because a doctor examined a woman and certified her as "blood test negative, smear negative," they may have sexual relations without risk of infection. A familiar sales talk of the pimps and madams is: "Our girls are all clean. Our doctor examines each one every two weeks. You'll find the doctor's certificates right in the girls' rooms." A feeling of security absolutely unwarranted by medical facts is given by the doctor's certificate. Between examinations a prostitute must have an average of 10 sexual contacts per day in order to pay expenses. Even if really free from any infectious disease at the time of the doctor's examination, a prostitute may become a carrier of disease with her first postexamination contact or any subsequent contact. Even if she were examined daily, no reliable assurance could be given that a prostitute would not spread venereal diseases.

Before a conscientious physician could express a valid opinion regarding the presence or absence of one or more venereal diseases in a woman who by occupation is many times daily exposed to the probability of infection, he would be required to make, at least daily, careful clinical examination including inspection of all skin and accessible mucous membrane surfaces. He must in all cases take blood for serologic tests for syphilis and specimens from at least four sites for spreads and cultures for the gonococcus. Any lesion of the skin or mucous membrane, especially of the genital, anal and oral regions, must be regarded with great suspicion and carefully examined. This would require biopsies and spreads for Donovan bodies of granuloma inguinale and spreads for Ducrey's bacillus. Most important, every suspicious lesion must be examined, repeatedly if necessary, by the dark field method for Treponema pallidum. Skin tests for lymphogranuloma venereum and chancroid may be indicated. The initial examination would require 30 to 60 minutes of the doctor's time. The total cost would be $35 to $50 for private medical and laboratory services. If any suspicious lesions were found, it might be a week or more before the physician could offer a valid scientific opinion regarding the presence or absence of venereal diseases. If no lesions were discovered, the physician should still suspect that he had overlooked one too small to be seen easily.

Obviously no such thorough examinations and, if necessary, follow-up observation of prostitutes are or can be made anywhere in the United States or abroad, but any less careful study is unworthy of the medical profession, even if there were no other compelling reasons for refusing to be a party to the prostitution racket.

The policy of the federal government, stated in the "Eight Point Agreement" signed by representatives of the Department of Defense and the Federal Security Agency, calls for the repression of prostitution, especially where the health and welfare of the nation's fighting men—many of them minors—are involved. No less important is the protection of the youth of the nation outside the armed forces. Patriotic motives, as well as a decent respect for medical ethics and law, should lead those few physicians who have been cooperating with prostitution rackets immediately to cease examining and certifying the unfortunate women who are exploited in a vicious and cruelly selfish traffic.

1. Resolution on Control of Venereal Diseases, New Business, J. A. M. A. **119**: 656 (June 20) 1942.

ORGANIZATION SECTION

DR. LEVIN RETURNS TO NEW YORK

Dr. Morton L. Levin, who has directed the program of the Commission on Chronic Illness on a leave of absence from the New York State Department of Health, has been recalled to his position as assistant commissioner for medical services and will return to Albany early this summer, it was announced by Mr. Leonard W. Mayo, chairman of the commission. During the year of Dr. Levin's directorship, the commission's education-research program has made rapid strides. Two studies of prevalence of chronic illness were initiated, one in a rural area and another among city dwellers. The rural study is now being launched in New Jersey by the Hunterdon (N. J.) Medical Center. The study will be carried out by Dr. Ray Trussell, medical center director, with a $60,000 grant from the Commonwealth Fund and plans developed by the commission.

The Commission on Chronic Illness is composed of 33 persons, professional and lay, interested in the problem of chronic illness. It was founded in May, 1949, as the result of the coordinated efforts of four national organizations, the American Hospital Association, the American Medical Association, American Public Health Association, and the American Public Welfare Association.

CIVIL DEFENSE PICTURE ADDED TO A. M. A. LIBRARY

The American Medical Association is one of the first organizations to receive prints of "Survival Under Atomic Attack," the first of a series of official Civil Defense Administration motion pictures. It deals with action the individual can take to protect himself in the event of attacks that may come either with or without warning. The film is black and white, sound, 16 mm., and runs nine minutes. It is available from the Committee on Medical Motion Pictures at a service charge of $1.00 plus transportation.

MEDICAL LEGISLATION

FEDERAL

Child Life Research

A bill to provide for research in child life, H. R. 4094, was introduced by Representative Elliott of Alabama. It would authorize 7½ million dollars annually to enable the federal security administrator to conduct and foster research in child life. Funds could be expended in grants-in-aid to schools and other public or nonprofit agencies. The bill is identical with S. 676, previously reported in THE JOURNAL.

Physically Handicapped Children's Education

Representative Kelley of Pennsylvania introduced H. R. 4136, which would enable the states to make more adequate provision for special services required for the education of physically handicapped children of school age. The bill proposes an appropriation of 4 million dollars for fiscal year 1952, gradually increasing the annual appropriations to 16 million dollars by 1955. This bill is identical with a previously reported bill, S. 1463.

Maternity Benefits for Wives of Servicemen

H. R. 4176, introduced by Representative Mitchell of Washington, proposes to establish a program of grants-in-aid to assist the states to provide maternity and infant care for the wives and infants of enlisted members of the armed forces during the present emergency. This bill would set up an Emergency Maternal and Infant Care program similar to the one in effect during World War II. An identical proposal was introduced earlier in the Senate as S. 1245, which has been previously reported.

The summary of federal legislation was prepared by the Washington Office of the American Medical Association and the summary of state legislation by the Bureau of Legal Medicine and Legislation.

STATE

Alabama

Bills Introduced.—H. 215, proposes that every person engaged in any business, vocation, occupation, calling, or profession enumerated in the bill shall pay a **license fee** in amounts specified. The bill enumerates physicians and other professions and the license fee varies from $15 to $100, depending upon the gross annual receipts of the individual's practice. S. 147, proposes regulations for the **sterilization** of mentally inferior or mentally deficient or feeble minded inmates in the Partlow State School for Mental Deficients.

Delaware

Bill Enacted.—H. 443, was approved May 14, 1951. It empowers the Medical Council of Delaware, by general regulation or specific orders, to **issue temporary emergency certificates,** said temporary certificates to be limited to twelve months duration, renewable at the discretion of the issuing authority, to such physicians and dentists licensed in another state as they shall find qualified to practice as such in the state during an emergency. The holder of this temporary certificate shall be privileged during the term specified therein to practice his profession in the state subject to such regulations, restrictions, and area limitations as the Medical Council may impose.

Florida

Bills Introduced.—H. 302, proposes the enactment of a new law regulating the practice of **registered and practical nursing.** H. 383, to amend the law relating to dealing in **dead bodies,** proposes that nothing in such law should be construed to prohibit the obtaining, dissecting, using and disposing of dead bodies for the purpose of teaching or other appropriate university research by any medical school, dental school, school of nursing or other university research or teaching unit which is a part of a regularly established or chartered institution of higher learning in the state. H. 1047, proposes that all citizens and tax payers of Bay County, Florida, shall have the right to be admitted to any hospital supported in whole or part by taxes and in the management of such hospital **no discrimination shall be made against any physician** or surgeon, provided such physician or surgeon has been admitted to the general practice of medicine or surgery under the laws of the state and all such physicians or surgeons shall have equal privileges in treating patients in such hospitals. H. 1059, proposes to authorize the state board of education to grant licenses to **psychologists.** A person practices psychology, under this proposal, when he renders to individuals or to the public any service involving the professional application of recognized principles, methods and procedures of the science and profession of psychology or when he holds himself out as being able to, or undertakes by whatever means to evaluate, appraise or classify mental abilities, personality characteristics, or personal or interpersonal maladjustments, or to perform psychological reeducation, psychological readjustment, psychological guidance, or counseling. Nothing in the proposal would permit a licensee to perform any physical or medical examination or to administer any physical or medical treatment. S. 712, proposes to direct the Board of Commissioners of State Institutions to select an advisory committee to study and survey possible State Hospital sites in the Tampa-Bay area and the lower east coast for the purpose of recommending a specific site for the construction of two branches of the **Florida State Hospital.** S. 775, proposes the creation of a Florida **state board of electrolysis** examiners and defines electrolysis as the method of removing superfluous hair from the human body by means of the application of an electrical current to the hair papilla, warts and benign growths by means of a needle or needles to cause decomposition of the hair-papilla and thus permanently remove the hair. S. 797, proposes to acquire practitioners of medicine, surgery, osteopathy, chiropractic, naturopathy, etc., to place a sign in a conspicuous place at the entrance to his office indicating the particular **kind or branch of the medical or material healing art** which he is licensed to practice. The proposal would further require that every sign showing the word "Doctor," "Dr." or "Physician" or any abbreviation thereof, shall indicate the person's name and the branch of healing arts which such person represents. S. 798, relating to naturopathy, proposes to require annual registration of naturopaths and further proposes to define **naturopathy** as the use and practice of psychological, mechanical and material health sciences to aid in purifying, cleansing and normalizing human tissues for the preservation or restoration of health, according to the fundamental principles of anatomy, physiology and applied psychology. Naturopathic practice shall employ and embrace the use of light, air, water, clay,

heat, rest, diet, external applications, mechanical and electrical appliances, suggesto-therapy, hydrotherapy, zone therapy, hygiene, first aid and sanitation; provided, however, that nothing in the proposal would be held or construed to authorize any naturopath to practice materia medica, surgery, or chiropractics or to prescribe or administer hypnotic or narcotic drugs.

Bill Enacted.—H. 95 became Law Without Approval May 9, 1951. It authorizes the **state board of medical examiners** to appoint or employ an assistant secretary or secretaries who need not be licensed physicians and to fix the salary of such assistants.

Illinois

Bills Introduced.—H. 950, to amend the law relating to chiropody, proposes to authorize the use of the **injunctive process** to enforce the provisions of the Chiropody Act. H. 953, to amend the law relating to pharmacy, proposes to authorize the use of the **injunctive process** to enforce the provisions of the Pharmacy Act. H. 954, to amend the law relating to nursing, proposes to authorize the use of the **injunctive process** to enforce the provisions of the Public Health Nursing Act. H. 959, to amend the law relating to the practice of medicine, proposes to authorize the use of the **injunctive process** to enforce the provisions of the Medical Practice Act. S. 598, to amend the law relating to a Medical Practice Act, proposes that one member of the **Medical Examining Committee** shall be an osteopath and one shall be a chiropractor and that in appointing such members due consideration shall be given to the recommendations of representative, osteopathic and chiropractic organizations.

Bills Enacted.—H. R. 45 was adopted March 28, 1951. It resolves that the **Hadacol** Company be notified that it is neither in the best interest of the people of the State of Illinois nor to the advantage of the manufacturer of Hadacol to use testimonials of young children to advertise a product of such a nature. S. R. 53, was adopted May 10, 1951. It provides for the appointment of a special committee to study the need for the establishment of a hospital in Chicago for the treament of **acute mental patients**, especially those addicted to the habitual use of narcotics and alcohol. S. R. 60, was approved May 16, 1951. It resolves the creation of a special committee to investigate the reasons why the City of Chicago, despite its need for additional beds for the treatment of **tuberculosis**, has not and does not use the facilities of the Municipal Contagious Disease Hospital for the treatment of such citizens.

Maine

Bill Enacted.—S. 243, was approved April 27, 1951. It amends the law relating to the Board of Registration in Medicine by authorizing such board to issue **reciprocity certificates** under certain circumstances.

Maryland

Bill Enacted.—H. 512 has become Chapter 701 of the Laws of 1951. It requires the **annual registration** of chiropractors.

Michigan

Bill Introduced.—H. C. R. 65, proposes the creation of a special committee to study the laws of the state governing **drug addicts** and to report their findings and recommendations.

Minnesota

Bills Enacted.—H. 113 has become Chapter 672 of the Laws of 1951. It provides for the creation of a **state board of examiners of psychologists.** H. 1585 has become Chapter 479 of the Laws of 1951. It authorizes the State Board of Medical Examiners to license and regulate the practice of **physical therapy**, which is defined to mean the treatment of any bodily or mental disorder of any person by the use of the physical, chemical, and other properties of heat or cold, light, water, electricity, massage, mechanical devices, and therapeutic exercise, which includes posture and rehabilitation procedures, provided, however, the use of roentgen rays and radium for diagnostic and therapeutic purposes, and the use of electricity for surgical purposes, including cauterization, shall not be authorized under the term "physical therapy."

Missouri

Bills Introduced.—H. 486, proposes the establishment as soon as possible of a full and complete **four year course of medical and surgical instruction** in the state under the direction and control of the Board of Curators of the University of Missouri. H. 490, proposes the creation and establishment under the direction of the division of mental diseases of a state hospital for the care, treatment and rehabilitation of **chronic alcoholics.** S. 214, proposes the creation of a state board of examiners in psychology to grant certificates to **certified psychologists** and **certified psychotechnicians.**

New Hampshire

Bill Enacted.—S. 16 has become Chapter 27 of the Laws of 1951. It amends the medical practice act by, among other things, authorizing the Board of Medical Examiners to issue **temporary five year licenses** to alien physicians who had taken out their first citizenship papers and are otherwise qualified for a license. If the alien becomes a citizen during the five years, he shall be issued a permanent license.

New Jersey

Bill Enacted.—A. 1, has become Chapter 69 of the Laws of 1951. It provides regulations for the establishment of consolidated **local health districts** and county local health districts.

Ohio

Bill Introduced.—S. 266, proposes the creation of a **state naturopathic board of examiners** and defines naturopathy as a system of drugless treatment of disease by methods that simulate or assist nature, including phytotherapy, dietetics, physical, mechanical, hygenic, and sanitary methods, essential to the preservation of health.

Oklahoma

Bill Enacted.—H. 241, was approved April 25, 1951. It provides regulations for the licensing of institutions desiring to obtain **animals from established dog pounds** for the purpose of investigation or instruction concerning the structure or functions of living organisms, the causes, preventions, control, or cure of diseases or abnormal conditions in human beings or animals.

Pennsylvania

Bills Introduced.—H. 1084, proposes regulations for making available to licensed institutions **unclaimed and unredeemed dogs** and cats in public pounds for scientific investigation experiment or instruction. H. 1102, proposes to grant to **hospitals a lien** on rights of action and counterclaims that any person admitted to such hospitals for care and treatment of personal injuries shall have against any other person on account of such injuries. The extent of such lien would be the amount of the reasonable charges of the hospital for the care and treatment of such person. H. 1137, proposes an appropriation for the general maintenance and operation of the Western State **Psychiatric Institute** and Clinic by the University of Pittsburgh. H. 1139, to amend the law relating to osteopathy, proposes to increase the **annual registration fee** from three to five dollars. H. 1192, proposes to amend the **definition of chiropody** so that such practice would not include the amputation of the leg, foot, or toes or the treatment of systemic diseases of the bones, ligaments, or muscles of the feet or any part of the body. H. 1205, proposes to authorize the State Department of Health to issue licenses to persons desiring to operate a **clinopathologic laboratory** which is defined as a place, establishment or institution operated by one or more individuals for the study of blood, urine, feces, and other secretions and excretions and parts of the human body such as tumors removed for examinations in connection with the study of possible diseases in the living patient. S. 559, proposes an appropriation to the Department of Health for the operation, maintenance and purchase of equipment of the Institute of **Cancer Research** Incorporated. S. 635, proposes that in any prosecution for a violation of the law relating to **driving a vehicle while under the influence of intoxicating liquor** the amount of alcohol in the defendant's blood at the time alleged as shown by chemical analysis of the defendant's blood urine, breath or other bodily substance shall give rise to certain presumptions as to whether or not the person is guilty of the charge. The proposal would also provide that operating a motor vehicle while under the influence of any narcotic or habit producing drug shall be a crime .

Bill Enacted.—H. 719 was approved May 10, 1951. It provides a deficiency appropriation to assist State-aided medical and surgical hospitals in meeting the cost of training **student nurses.**

Rhode Island

Bills Enacted.—H. 748, was approved May 3, 1951. It provides for the creation of a special committee to make a study of the feasibility of setting up a **medical school at Rhode Island State College.** H. 752, was approved May 1, 1951. It provides for the creation of a **division of alcoholism** to promote or conduct educational and preventive programs relating to alcoholism.

Texas

Bills Introduced.—H. C. R. 108, would resolve that the House go on record as requesting this Board of State Hospitals and Special Schools to take the necessary steps to meet the **minimum standards required** in order to qualify the said **hospitals and special schools** operated by the State of Texas to the necessary standards for residency, intern and nurses training programs so that the patients of the said hospitals and special schools be given the highest type of medical care and treatment possible. H. 798, proposes regulations which would authorize adjoining cities, towns and villages to jointly establish, erect and equip **hospitals.**

Bill Enacted.—H. 111, was approved May 10, 1951. It provides, among other things, that all practitioners of the healing art shall indicate on any sign, pamphlet, letterhead or the like, a **designation of the system of the healing art** which such individual is licensed to practice.

Wisconsin

Bill Introduced.—S. 795, relating to the disposition of **dead bodies,** provides that if a corpse is found in the Mendota state hospital district then the University of Wisconsin shall be notified that it may have such corpse; if the corpse is in the Winnebago state hospital district, that Marquette university or any accredited school of mortuary science at Milwaukee shall be notified that it may have such corpse.

Bill Enacted.—A. J. R. 74 was adopted May 4, 1951. It directs the education committee of the legislative council to make a survey of **sanitation and safety in the public schools.**

MEDICAL NEWS

COLORADO

Summer Clinics at Children's Hospital.—The annual summer clinics of Children's Hospital, Denver, will be held June 20-22. The guest speakers are Dr. Alexis F. Hartmann, pediatrician, St. Louis; Dr. Herbert E. Coe, pediatric surgeon, Seattle, and Dr. Douglas N. Buchanan, pediatric neurologist, Chicago. Each guest speaker will conduct a two-hour clinic on one of the three days, give a lecture on a subject of general interest within his field, and appear with staff members and guests in panel discussions of pertinent subject matter of common interest and concern to all physicians interested in the care of infants and children. In addition, the guest speakers and staff members will take part in a question-and-answer period after luncheon on each of the three days. Further information concerning the clinics may be had, and registration for the clinics may be accomplished, by calling or writing to the chairman at the hospital.

CONNECTICUT

Outbreak of Trichinosis.—Dr. James C. Hart of Hartford, a member of the state department of health, has reported to the U. S. Public Health Service a family-group outbreak of trichinosis in Bridgeport. Homemade Italian sausage prepared with ham purchased from a large packing house was eaten by the family on April 4. Symptoms appeared 12 days later in the father, mother, two daughters, and a daughter-in-law. Nausea, diarrhea, vomiting, and swelling of the eyelids preceded the onset of muscular pains in each case.

GEORGIA

State Medical Election.—The Medical Association of Georgia at its annual session in Augusta in April installed Dr. William F. Reavis of Waycross as president. Other officers include: Dr. Cornelius F. Holton, Savannah, president-elect; Dr. David H. Poer, Atlanta, secretary-treasurer, and Dr. Charles H. Richardson Sr., Macon, delegate to the American Medical Association.

ILLINOIS

New Cancer Clinic.—The 26th cancer diagnostic clinic established by the state department of public health has been opened at Fairfield Memorial Hospital in Fairfield. The meeting of the clinic will be held beginning at 1 p. m. on the third Monday of each month. Persons may be admitted to this clinic for cancer diagnostic service on referral by their physician or dentist.

Psychiatric Residency Training.—The Illinois Department of Public Welfare has outlined a program that will offer residents in psychiatry three years of training in approved mental hospitals affiliated with the department. These residents will be able to fulfill the requirements of the training programs suggested by the American Board of Psychiatry and Neurology. One and one-half years will be spent in state mental hospitals, and another one and one-half years will be devoted to the various specialties. The program will go into effect July 1. Residents in psychiatry will be assigned to individual hospitals. A representative of the chief medical officer will act as liaison officer between the department of public welfare and the various institutions. The educational residency training committee will serve as advisory counsel for the chief medical officer and the residents for complaints or suggestions.

Chicago

Award Ricketts Medal.—Herald R. Cox, Sc.D., director of viral and rickettsial research for the Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y., received the Howard T. Ricketts gold medal May 7. The medal, established in 1949 in memory of Dr. Ricketts, a University of Chicago physician, is awarded for outstanding achievement in medicine. Dr. Cox was cited for having discovered Q fever in the United States.

Joseph A. Capps Prize.—The Institute of Medicine of Chicago offers this biennial prize of $600 for the most meritorious investigation in medicine or in the specialties of medicine. The investigation may be also in the fundamental sciences, provided the work has a definite bearing on a medical problem. Competition for 1951 is open to graduates of Chicago medical schools who completed their internship or one year of laboratory work in 1949 or thereafter. Manuscripts must be submitted to the Secretary of the Institute of Medicine of Chicago, 86 E. Randolph St., not later than Dec. 31. The manuscript of the prize paper is to become the property of the Institute of Medicine of Chicago. If no paper presented is deemed worthy of the prize, the award may be withheld at the discretion of the board of governors.

IOWA

A Family of Doctors.—The fact that a doctor's sons often follow in their father's footsteps is illustrated by the Gilfillan family, in which the sixth generation is carrying on the family tradition. Dr. Homer J. Gilfillan of Bloomfield, who retired recently after 50 years in country practice in Iowa, had six sons who graduated from the University of Iowa School of Medicine. Until the recent death of the eldest, Dr. George William Gilfillan, all sons were in active practice. Ever since Dr. Alexander V. Gilfillan began practice in Philadelphia in 1796 this family has been active in the medical profession. According to *The Centaur,* Alpha Kappa Kappa's official journal, some member of this family has served in every war in which this country has engaged since the War of 1812. Five of the Gilfillan brothers saw active duty in World War II, and on return from service four entered practice in Bloomfield; the other two brothers are in practice in San Francisco and Sault Ste. Marie, Mich., respectively. A grandson is now taking premedical work at Iowa Wesleyan College.

MASSACHUSETTS

Society Election.—At the yearly meeting of the Massachusetts Society of Examining Physicians, held at the Harvard Club in Boston May 2 the following persons took office for the ensuing year: Dr. John J. Crowley, Lynn, president; Dr. John Leo Doherty, Boston, president-elect; Dr. Robert C. Gwin, Brookline, treasurer, and Dr. J. Robertson Knowles, Boston, secretary.

Cancer Research Institute and Joslin Auditorium.—Dedication exercises for the New England Deaconess Hospital Cancer Research Institute and the Elliott P. Joslin Auditorium were held June 5 in Boston. An address by Sumner T. Pike, vice chairman of the U. S. Atomic Energy Commission, Washington, D. C., was followed by an inspection of the new facilities. At the scientific session Dr. Sidney Farber, Boston, delivered the principal address. The scientific aims of the Cancer Research Institute were discussed by Dr. Shields Warren, Boston. Dr. Charles H. Best, Toronto, Canada, spoke in the evening at the dedication of the Joslin Auditorium. His subject was, "Medical Research and World Health." The institute combines under one roof cancer research, atomic research, cancer control and cancer diagnosis, outpatient department tumor clinics, and postgraduate medical instruction in cancer. The research activities will include biological chemistry, biophysics, biostatistics, clinical contacts, experimental pathology, hematology, radiobiology, and x-ray diffraction. The Institute will house also the cancer control unit of the Harvard School of Public Health, the Massachusetts State Tumor Diagnosis Service, the pathology laboratory of the Harvard Cancer Commission, and an auditorium for the use of the staffs of the New England Deaconess Hospital and Cancer Research Institute.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

MINNESOTA

Outbreak of Salmonellosis.—Dr. Dean S. Fleming of Minneapolis, a member of the Minnesota Department of Health, has reported to the U. S. Public Health Service an outbreak of Salmonella typhimurium infection, the suspected source of which was raw turkey eggs used in preparing the eggnog from which the organism was isolated. Ten of the 11 persons who drank the eggnog became ill with gastro-enteritis seven to 24 hours later. Salmonellosis typhimurium was isolated from nine of the 11 persons, including one who did not have clinical symptoms.

Personals.—Dr. S. Marx White, Minneapolis, received the annual distinguished service award of the Community Chest and Council of Hennepin County in January. Dr. White, who has practiced in Minneapolis for more than 50 years, has been president of the state board of health and the Community Chest and member of the county sanatorium commission.——Dr. John F. Pohl of Minneapolis left early in April on a three month fellowship in Europe under the World Health Organization to study treatment, care, management and employment of crippled children and adults in England, Germany, France and Austria.

NEW YORK

Postgraduate Lecture.—The Herkimer County Medical Society meeting at the Pinecrest Sanatorium, Salisbury Center, June 12 will hear Dr. Milton Plotz, Brooklyn, speak on "Hypertension and Coronary Heart Disease." The program has been arranged by the Medical Society of the State of New York in cooperation with the New York State Department of Health.

Course on Electron Microscope.—The summer laboratory course in techniques and applications of the electron microscope will be given again this summer by the laboratory of electron microscopy in the department of engineering physics at Cornell University July 9-21. Inquiries should be addressed to Prof. Benjamin M. Siegel, Department of Engineering Physics, Rockefeller Hall, Cornell University, Ithaca, N. Y.

Fellowships in Arthritis.—The Arthritis and Rheumatism Foundation is offering research fellowships in the basic sciences related to arthritis. Fellowships will be granted at both the predoctoral and the postdoctoral levels. The predoctoral fellowships will range between $1,500 and $3,000 per annum, and the postdoctoral from $3,000 to $6,000. Application forms may be obtained from the Medical Director, Arthritis and Rheumatism Foundation, 535 Fifth Ave., New York 17, before Nov. 15.

New York City

The Sixth Premature Infant Center.—Dedication ceremonies for the new Premature Infant Center at Bellevue Hospital were held May 22. The center, with a capacity of 32 infants and constructed at a cost of $48,000, is one of six such centers in operation or being constructed and equipped in the municipal hospitals, with one-third of the cost met with federal funds under the Hill-Burton Bill. The other centers are in Harlem, Queens General, Kings County, Fordham, and Lincoln hospitals. City-wide figures on the incidence of prematurity show that 8.5% of all live births are premature by weight definition. Fourteen per cent of these prematurely born infants die during their first year.

Clinic for Therapeutic Radiology.—Ground was broken May 18 for the new $160,000 underground Henry Harrington Janeway Clinic for Therapeutic Radiology at Roosevelt Hospital. The money has been raised from individual contributions, gifts from foundations, and a benefit sponsored by the hospital volunteers. The radium, valued at one million dollars, has been loaned to the hospital for five years by the Union Miniere du Haut Katanga of Belgium through the Radium Chemical Company, the American representative. The department was named for the late Dr. Henry Harrington Janeway, a pioneer in radium work who was later director of the early radium projects at Memorial Hospital. Dr. Douglas Quick will be director of the Janeway Clinic. The department will be located underground between the Russell Memorial Building and the Tower Memorial Building. The radium is being processed in Brussels and is expected to arrive simultaneously with the completion of the department in September.

VIRGINIA

University Appointments.—Dr. Lester A. Wilson Jr., instructor in obstetrics and gynecology, Duke University, Durham, N. C., was appointed assistant professor of obstetrics and gynecology at the University of Virginia Department of Medicine, Charlottesville, effective May 1. Edwin W. Pullen, instructor in biology at the university, has been appointed instructor in anatomy effective Sept. 1.

Death of Executive Secretary-Treasurer.—Mr. Henry S. Johnson, executive secretary-treasurer and public relations director of the Medical Society of Virginia, died May 23 after a short illness. Mr. Johnson was a graduate of the University of Richmond, held an M. A. degree from the University of Virginia, and did graduate work at the College of William and Mary and New York University. He formerly represented Goochland County in the state house of delegates and had many friends in the House of Delegates of the American Medical Association.

WEST VIRGINIA

Personal.—Dr. James L. Thompson of Weirton has been named chief surgeon and director of the medical department of the Weirton Steel Company at Weirton, succeeding Dr. Lewis A. Whitaker, who has retired after 23 years of service with the company but will continue as a consultant to the medical department. Dr. Thompson has been Dr. Whitaker's assistant for the past 16 years.

County Society Postgraduate Program.—The second annual postgraduate session of the Barbour-Randolph-Tucker Medical Society will be held at the Tygart Valley Country Club near Elkins June 21 with Dr. Charles L. Leonard of Elkins serving as moderator. The following scientific program will be presented, beginning at 2 o'clock:

Samuel P. Martin, Durham, N. C., Treatment of Common Respiratory Disorders.
Bill L. Martz, Indianapolis, Anion Exchange, Resins: A New Concept in the Treatment of Edema.
Brian Blades, Washington, D. C., Bronchiogenic Carcinoma.

Dr. Delivan A. MacGregor, Wheeling, will be toastmaster at the annual banquet in the evening, and the guest speaker will be Lt. Col. Colin F. Vorder Bruegge (MC) USA, Institute of Pathology, Washington, D. C. A general invitation has been extended to members of the West Virginia State Medical Association to attend the meeting.

WISCONSIN

Marquette Alumni Meeting.—The Marquette Medical Alumni Association will hold a luncheon meeting at the Hotel Dennis in Atlantic City, N. J., on Tuesday, June 12. Father Clarence J. Ryan, regent of the alumni association, and Dr. John S. Hirschboeck, dean of Marquette University School of Medicine, Milwaukee, will speak. Marquette medical alumni should make reservations with the Alumni Association office, 1533 W. Wisconsin Ave., Milwaukee.

Diabetes Control Program.—This program in Milwaukee, which was staffed by the personnel of the U. S. Public Health Service, closed in February after 22 months in which it gave free diabetes detection tests to study the effectiveness of various diabetes detection programs. The Public Health Service funds have been diverted into the field of civil defense. The testing began in the fall of 1949 in the first of three Milwaukee areas of 10,000 population each. Three plans of educational approach were used: door-to-door distribution of literature, supplemented by house-to-house visits by city health nurses, and the community approach to lay groups. Blood-sugar tests were used for most of the people in the three areas, rechecks of non-negative tests were made and follow-up was completed. Physicians reported to the program on the final diagnosis. In the blood-sugar testing program nearly 5,000 persons were examined. About

250 were referred to their private physicians, and 180 were previously undetected diabetics who were placed under treatment by the physician of their choice. On Oct. 16 the program changed from blood-sugar testing to urine testing and was conducted in industrial plants. Of 6,300 containers returned, 26 patients were diagnosed as previously undetected diabetics and were put under the care of their family physicians. Final accurate statistical evaluation of the data will not be available until tabulated by the U. S. Public Health Service.

GENERAL

American Diabetes Association.—The 11th annual meeting of the American Diabetes Association will be held at Chalfonte-Haddon Hall, Atlantic City, N. J., June 9-10 under the presidency of Dr. Lester J. Palmer, Seattle. In addition to the scientific program there will be a conference of presidents of affiliate associations Saturday morning, a luncheon conference, and a banquet Saturday evening at which the Banting Memorial Medal will be presented to Dr. Cyril N. H. Long, sterling professor of physiological chemistry, Yale University School of Medicine, New Haven, Conn. Dr. Long will present the Banting Memorial Lecture Saturday afternoon on "The Endocrine Control of the Blood Sugar." An address will be presented by Gerald L. Wendt, Ph.D., New York, on "The Interpretation of Scientific Progress." The annual business meeting will be held Sunday morning.

Cancer Society Plans More Clinics.—The American Cancer Society announced in March plans to increase by 150 per cent the number of cancer detection and treatment clinics. At least 900 more are needed to provide one center for every 100,000 population. There are now 609 such centers, according to Dr. Charles S. Cameron, medical director. The society will equip the clinics, provide supplies and operating facilities and help form a cancer group from the regular hospital staff in any locality. Only two states have enough cancer clinics to meet the society's population formula, Dr. Cameron said. They are Connecticut, with 23 centers for its over 2,000,000 residents, and New Hampshire, which has 11 facilities and a population of 533,000. Twelve of the nation's 609 cancer services are cancer hospitals, 470 are cancer clinics in hospitals, 120 are cancer diagnostic clinics and seven are departmental cancer clinics in other institutions.

Western Institute on Epilepsy.—The third Western Institute on Epilepsy will be held in Salt Lake City, June 15-17. The program is presented as a memorial to Dr. Jerry C. Price, formerly associated with the Neurological Institute in New York and vice president of the National Association to Control Epilepsy. Dr. Tracy Putnam, Beverly Hills, Calif., will speak on "The Evolution and Future of the Treatment of Epilepsy." Besides demonstrations and scientific papers, there will be a symposium on the therapeutic considerations under the chairmanship of Dr. Louis S. Goodman, University of Utah School of Medicine, Salt Lake City. Other participants will be Dr. Richard R. Carter, Portland, Ore., and Dr. Jean P. Davis, Salt Lake City. Registration fee for all physicians is $5 and for others $3, which includes the luncheon on Saturday. Applications should be sent to: Chairman, Western Institute on Epilepsy, Department of Psychiatry, Salt Lake General Hospital, 156 Westminster Ave., Salt Lake City.

American Therapeutic Society.—The 52d annual meeting of the American Therapeutic Society will be held at the Chalfonte-Haddon Hall, Atlantic City, N. J., June 8-10 under the presidency of Dr. James A. Lyons, Washington, D. C. An address of welcome will be presented by Dr. Anthony G. Meredino, president of the Atlantic County Medical Society. Among the speakers on the scientific program are: Drs. George L. Waldbott, Detroit; Z. T. Bercovitz, New York; L. Clagett Beck, Honolulu, Hawaii; Anthony Bassler, New York; Ernest A. Spiegel and Henry T. Wycis, Philadelphia; Francis M. Pottenger, Monrovia, Calif.; W. Wayne Babcock, Philadelphia; Benjamin Manchester, Washington, D. C.; Howard Wakefield and Willis G. Diffenbaugh, Chicago; Alphonse McMahon, St. Louis; Louis Faugeres Bishop Jr., and Milton R. Beyers, New York; Frank W. Konzelmann, Washington, D. C.; Paul Cutler, Atlantic City, N. J.; David I. Macht, Baltimore; Herbert S. Kupperman and Stanley J. Goodman, New York; Hollis K. Russell, Scarsdale, N. Y., and Oscar B. Hunter Jr., Washington, D. C. The president's reception will be held Saturday evening, followed by the banquet at which the speaker of the evening will be Dr. Jonathan Forman, Columbus, Ohio, editor of the *Ohio State Medical Journal*.

Colonel Tuttle to Retire.—Col. Arnold D. Tuttle, who pioneered medical research as related to commercial air transportation, has announced his retirement from United Air Lines, effective June 1. He will be succeeded by Dr. George J. Kidera. Col. Tuttle served in France during World War I, supervised the reorganization of the Army medical department, and served as commandant of the Army School of Aviation Medicine at Randolph Field, Texas. He joined United in 1937 to undertake a long-range project of applying medical research and techniques to commercial air transportation. He holds the 1949 John Jeffries award of the Institute of Aeronautical Sciences for "outstanding contributions to the advancement of aeronautics through medical research." His military decorations include the Distinguished Medal, French Legion of Honor, and Belgian Order of Leopold. Dr. Kidera, with United since 1939, served four years as an Air Force flight surgeon, then returned to United in 1946 as head of the company's Chicago medical branch.

Foundation Prize.—The American Association of Obstetricians, Gynecologists and Abdominal Surgeons will award its Foundation Prize of $200 at the annual meeting of the association, at which time the successful contestant must appear in person to present his contribution as a part of the regular scientific program. Eligible contestants shall include only (a) interns, residents or graduate students in obstetrics, gynecology or abdominal surgery, and (b) persons with an M.D. degree or a scientific degree approved by the Prize Award Committee, who are actively practicing or teaching obstetrics, gynecology or engaged in research in these fields. Manuscripts must be presented under a nom de plume, which shall in no way indicate the author's identity, to the secretary of the association together with a sealed envelope bearing the nom de plume and containing a card showing the name and address of the contestant. Manuscripts must be limited to 5,000 words and must be typewritten in double spacing on one side of the sheet. Ample margins should be provided.

World Birth Rates.—Birth rates throughout the world rose sharply shortly after the close of World War II and have continued at high levels during the postwar years, Metropolitan Life Insurance Company statisticians report. Most of the countries had higher birth rates during the war than in the years just before the war. In the United States, for example, the rates averaged 15 per cent higher in 1940-1944 than in 1937-1939, and in Austria, Sweden, Switzerland, and New Zealand the rise from the prewar to the war years was even more pronounced. These facts suggest that the postwar rise in births in many of the countries was due not so much to deferment of births during the war as to the improvement of economic conditions after the war. Although the world trend has been somewhat downward since 1947, when most countries reached their postwar birth rate peak, the declines generally have been slight. In the United States the 1949 rate was only 7 per cent lower than that for 1947, and the decreases have been even smaller in other countries, including Canada, the Union of South Africa, and Australia. Exceptions to this are England and Wales and the Netherlands, where the rates had declined markedly by 1949 from their postwar peaks. France, for many years prior to the war on the brink of a population decline, experienced an upsurge of births during the postwar years, which by 1947 had carried its birth rate to a point 43 per cent higher than the prewar level. Japan's 1947 birth rate was 22 per cent above the prewar figure, and the decline from 1947 through 1949 was only 3 per cent, although the first nine months of 1950 showed a sharp fall that may bring the 1950 rate close to the 1937-1939 level. Western Germany and Italy have departed from the general pattern. Western Germany's birth rate rose somewhat during the postwar years but remained well below the 1938 figure, and the Italian rate, after rising during 1945 and 1946, declined by 1949 to 15 per cent below that for the prewar period.

CANADA

Personal.—The Manufacturers Life Insurance Company, Toronto, has announced the appointment of Dr. David J. Breithaupt, Scarborough Junction, Ontario, as assistant medical officer.

Cleft Palate Rehabilitation.—A clinical and research project in caring for children and adults with cleft lip and palate was established during 1950 at the Royal Victoria Hospital in Montreal. A grant of over $20,000 from the Department of Health of the Province of Quebec, which will provide partial support, has been renewed for 1951. This program provides speech therapy in both French and English and offers training facilities for children and adults. A long term research investigation into the value of various types of therapy will be carried out. Experimental work on animals, already completed, has revealed data on the role of environmental factors in causation of cleft palate. The speech pathologist in charge of speech therapy is Mr. Robert Sparks, M.A., formerly of Stanford University, San Francisco.

FOREIGN

Medical Education Team for Japan.—The organization of the third medical education team for Japan has been undertaken by the Unitarian Service Committee with the approval of the Supreme Command Allied Powers. Four teams of three men each will spend a period of two weeks in three different medical schools between May 14 and July 1. The medical education team is composed of Drs. Paul B. Beeson, Atlanta; Lauren V. Ackerman, St. Louis; Daniel C. Darrow, New Haven, Conn.; Charles S. Davidson, Boston; Charles G. Johnston, Detroit; Philip Handler, Ph.D., Durham, N. C.; Drs. Salvatore P. Lucia and Robert R. Newell, San Francisco; Malcolm H. Soule and Maurice H. Seevers, Ann Arbor, Mich., and Perry P. Volpitto, Augusta, Ga. A second surgeon will be included.

British South African Meeting Cancelled.—The annual scientific meeting of the British Medical Association, which was to have been held in South Africa, has been cancelled due to circumstances outside the control of the Association. Arrangements have now been made jointly by the Royal Society of Medicine and the British Medical Association for a series of scientific meetings to be held throughout June at One Wimpole St., London, W. 1. This scientific meeting will consist of symposiums introduced by eminent authorities on subjects of special interest under the general heading of "Medicine in Britain in the Festival Year, 1951—Its Achievements and Its Future." These meetings are open to all medical practitioners. A cordial invitation has been extended to members of the American Medical Association.

First Children's Hospital in Bolivia.—An agreement providing for technical assistance from the World Health Organization in the construction, equipping, and organization of the first children's hospital in Bolivia has been signed by the minister of health of Bolivia and the director of WHO's regional office for the Americas. The $500,000, 240-bed hospital already under construction in La Paz is scheduled for completion in 1952. The United Nations International Children's Emergency Fund has earmarked $75,000 for equipment and supplies. The World Health Organization has set aside $40,000 for the training of professional and technical personnel for the hospital's staff. Fellowships will be awarded by WHO for the postgraduate and technical training of four pediatricians, three pediatric nurses, and one each of the following: radiologist, pathologist, anesthetist, director of nurses, operating room supervisor, hospital administrator, hospital accountant, laundry manager, maintenance engineer, and medical librarian. The fellowship recipients will be selected by the Bolivian Ministry of Health and will receive training in medical institutions in the United States and Latin American countries. The new children's hospital will be used as the foundation for a comprehensive program for child health services in Bolivia and will serve also as a training center for pediatricians, pediatric nurses, social workers, and other personnel engaged in child health and welfare.

MEETINGS

AMERICAN MEDICAL ASSOCIATION, Atlantic City, June 11 to 15. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

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AMERICAN COLLEGE OF CHEST PHYSICIANS, Atlantic City, June 7-10. Mr. Murray Kornfeld, 500 N. Dearborn St., Chicago 10, Executive Secretary.

AMERICAN COLLEGE OF RADIOLOGY, Atlantic City, June 10. Mr. W. C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN DIABETES ASSOCIATION, Chalfonte-Haddon Hall, Atlantic City, June 9-10. Dr. John A. Reed, 11 W. 42d St., New York 18, Secretary.

AMERICAN ELECTROENCEPHALOGRAPHIC SOCIETY, Hotel Claridge, Atlantic City, June 16-17. Dr. John A. Abbott, Massachusetts General Hospital, Boston 14, Secretary.

AMERICAN HEARING SOCIETY, Palmer House, Chicago, June 29. Mrs. Frances E. Lee, 817 Fourteenth St. N.W., Washington 5, D. C., Secretary.

AMERICAN MEDICAL WOMEN'S ASSOCIATION, Hotel Dennis, Atlantic City, June 9-11. Dr. Mildred C. J. Pfeiffer, Woman's Medical College of Pennsylvania, Philadelphia 29, Secretary.

AMERICAN NEUROLOGICAL ASSOCIATION, Atlantic City, June 18-20. Dr. H. Houston Merritt, 710 W. 168th St., New York 32, Secretary.

AMERICAN ORTHOPEDIC ASSOCIATION, The Greenbrier, White Sulphur Springs, W. Va., June 20-23. Dr. C. Leslie Mitchell, Henry Ford Hospital, Detroit 2, Secretary.

AMERICAN PROCTOLOGIC SOCIETY, Atlantic City, June 7-10. Dr. W. Wendell Green, 1838 Parkwood Ave., Toledo 2, Ohio, Secretary.

AMERICAN SOCIETY FOR THE STUDY OF STERILITY, Ritz-Carlton Hotel, Atlantic City, June 9-10. Dr. John O. Haman, 490 Post St., San Francisco 2, Secretary.

AMERICAN THERAPEUTIC SOCIETY, Atlantic City, June 8-10. Dr. Oscar B. Hunter, 915 Nineteenth St. N.W., Washington 6, D. C., Secretary.

CONFERENCE OF PRESIDENTS AND OTHER OFFICERS OF STATE MEDICAL ASSOCIATIONS, Hotel Traymore, Atlantic City, June 10. Mr. John E. Farrel, 106 Francis St., Providence 3, R. I., Secretary.

GREAT FALLS MEDICAL-SURGICAL CONFERENCE, Great Falls, Montana, June 25-26. Dr. William E. Sullens, Box 1066, Great Falls, Chairman.

IDAHO STATE MEDICAL ASSOCIATION, Sun Valley, June 17-20. Dr. Robert S. McKean, 305 Sun Building, Boise, Secretary.

MAINE MEDICAL ASSOCIATION, Poland Spring House, Poland Spring, June 17-19. Dr. Frederick R. Carter, 142 High St., Portland 3, Secretary.

MEDICAL LIBRARY ASSOCIATION, Denver, June 28-30. Miss Caroline Riechers, Rush Medical College Library, 1758 W. Harrison St., Chicago 12, Secretary.

POST GRADUATE MEDICAL ASSEMBLY OF SOUTH TEXAS, Shamrock Hotel, Houston, Texas, July 23-25. Mrs. W. H. Dahme, 229 Medical Arts Bldg., Houston, Executive Secretary.

SOCIETY FOR VASCULAR SURGERY, Chalfonte-Haddon Hall, Atlantic City, June 10. Dr. George D. Lilly, 333 Ingraham Bldg., Miami 32, Fla., Secretary.

SOCIETY OF BIOLOGICAL PSYCHIATRY, Claridge Hotel, Atlantic City, June 17. Dr. George N. Thompson, 1136 W. Sixth St., Los Angeles 17, Secretary.

WEST VIRGINIA STATE MEDICAL ASSOCIATION, The Greenbrier, White Sulphur Springs, July 19-21. Mr. Charles Lively, 1031 Quarrier St., Charleston 24, Executive Secretary.

INTERNATIONAL

EUROPEAN CONGRESS ON RHEUMATISM, Barcelona, Spain, Sept. 24-27. Dr. Gunnar Edström, Lund, Sweden, Secretary.

GENERAL PRACTITIONERS STUDY CLUB INTERNATIONAL, Rome, Italy, Sept. 12-15. Dr. John O'Connell, 10300 Lackland Road, St. Louis 14, Mo., U. S. A., President.

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, London, England, Sept. 3-7. Mr. R. W. Cope, University College Hospital, London W.C.1, England.

INTERNATIONAL ASSOCIATION OF ALLERGISTS, Zurich, Switzerland, Sept. 23-29. Prof. A. S. Grumbach, Hygiene Institut der Universitaet Zurich, Gloriastr. 32, Zurich, Switzerland.

INTERNATIONAL CONGRESS OF ANESTHESIOLOGY, Nursing School of the Salpietre, 47 Boul de l'Hospital, Paris, France, Sept. 20-22. 12 rue de Seine, Paris 6e, France, Secretariat.

INTERNATIONAL CONGRESS OF CLINICAL PATHOLOGY, London, England, July 16-20. Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London W.9, England, Secretary.

INTERNATIONAL CONGRESS OF GYNECOLOGY, Maison de la Chimie, Centre Marcellin, Paris, France, June 23-29. Dr. Maurice Fabre, 1, rue Jules-Lefebvre, Paris IX, General Secretary.

INTERNATIONAL CONGRESS ON INDUSTRIAL MEDICINE, Instituto Superior Técnico, Lisbon, Portugal, Sept. 9-15. Dr. Luis Guerreiro, Instituto Nacional do Trabalho e Previdência, Praça do Comercio, Lisbon, Secretary General.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, Mexico City, Mexico, Dec. 11-19.

INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY, Paris, France, June 17-23. Physician General Dutrey, 8, bis, rue de Recollets, Paris X, Secretary General.

INTERNATIONAL EXHIBITION OF MEDICAL ARTS, Turin, Italy, May 30-June 12. Prof. S. Teneff, Palazzo della Exposizioni al Valentino, Turino, Italy.

INTERNATIONAL GERONTOLOGICAL CONGRESS, Hotel Jefferson, St. Louis, Mo., U. S. A., Sept. 9-14. Dr. John E. Kirk, 5600 Arsenal Street, St. Louis 9, Mo., Chairman, Program Committee.

INTERNATIONAL HOSPITAL CONGRESS, Brussels, Belgium, July 15-21. Capt. J. E. Stone, 10 Old Jewry, London E.C., England, Secretary.

INTERNATIONAL POLIOMYELITIS CONGRESS, Copenhagen, Denmark, Sept. 3-7. Prof. Dr. Niels Bohr, Statens Seruminstitut, 80 Amager Blvd., Copenhagen S., Denmark, President.

INTERNATIONAL SOCIETY OF SURGERY, Paris, France, Sept. 24-29. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, Secretary General.

INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Fifth World Congress, Stockholm, Sweden, Sept. 9-14. Mr. Donald V. Wilson, 54 E. 64th St., New York 21, N. Y., U. S. A., Executive Director.

PAN PACIFIC SURGICAL ASSOCIATION CONGRESS, Honolulu, Hawaii, Nov. 7-19. Dr. Forrest J. Pinkerton, Suite 7, Young Bldg., Honolulu, Hawaii, President.

STUDENTS' INTERNATIONAL CLINICAL CONGRESS, Leyden, Utrecht, Groningen and Amsterdam, Holland, July 10-28. N. A. M. Bergstein, Oude Gracht 143 bis, Utrecht, Holland, Secretary General.

WORLD CONFEDERATION FOR PHYSICIAL THERAPY, Copenhagen, Denmark, Sept. 7-8.

WORLD MEDICAL ASSOCIATION, Stockholm, Sweden, Sept. 15-21. Dr. Louis H. Bauer, 2 E. 103d St., New York 29, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 26-28. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

ARIZONA:* *Examination.* Phoenix, July 17-19. *Reciprocity.* Phoenix, July 21. Sec., Dr. J. H. Patterson, 316 W. McDowell Road, Phoenix.

ARKANSAS: * *Regular.* Little Rock, June 14-15. Sec., Dr. Joe Verser, Harrisburg. *Homeopathic.* Fort Smith, June 7-8. Sec., Dr. Carl S. Bungart, 105 N. 14th St., Fort Smith. *Eclectic.* Little Rock, June 7-8. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written.* San Francisco, June 25-28 and Aug. 20-23. *Oral.* San Francisco, June 23 and Los Angeles, August 18. *Oral and Clinical Examination for Foreign Medical School Graduates.* San Francisco, June 24 and Los Angeles, August 19. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento 14.

COLORADO:* *Examination.* Denver, June 18-20. *Reciprocity.* Denver, July 10. Sec., Dr. George H. Gillen, 831 Republic Bldg., Denver 2.

CONNECTICUT:* *Regular. Examination.* Hartford, July 10-11. Sec. to the Board, Dr. Creighton Barker, 160 St. Ronan St., Hartford. *Homeopathic.* Derby, July 11-12. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: *Examination.* Dover, July 10-12. *Reciprocity.* Dover, July 19. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA:* *Reciprocity.* Washington, June 11. Sec., Dr. Daniel L. Seckinger, 4130 East Municipal Bldg., Washington.

FLORIDA:* *Examination.* Jacksonville, June 24-26. Sec., Dr. Homer L. Pearson, 701 DuPont Bldg., Miami.

GEORGIA: Atlanta, June. Augusta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

GUAM: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Ex. Sec., Dr. John Y. Battenfield, Agana.

HAWAII: *Examination.* Honolulu, July 9-12. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

IDAHO: Boise, July 9-11. Sec., Mr. Armand L. Bird, 305 Sun Bldg., Boise.

ILLINOIS: Chicago, June 26-28. Supt. of Regis., Mr. Charles F. Kervin, Capitol Bldg., Springfield.

INDIANA: Indianapolis, June 20-22. Exec. Sec., Miss Ruth V. Kirk, 1138 K. of P. Bldg., Indianapolis 4.

IOWA:* *Written.* Iowa City, June 11-13. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Kansas City, June 6-7. Sec., Dr. O. W. Davidson, 864 New Brotherhood Building, Kansas City.

KENTUCKY: Louisville, June 6-8. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville.

LOUISIANA: New Orleans, June 7-9. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans 12.

MAINE: Augusta, July 10-11. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: Baltimore, June 19-22. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic.* Baltimore, June 19-20. *Examination.* Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, July 10-13. Sec., Dr. Robert C. Cochrane, Room 37, State House, Boston 33.

MICHIGAN:* *Examination.* Ann Arbor and Detroit, June 11-13. Sec., Dr. J. Earl McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA:* Minneapolis, June 19-21. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Jackson 113.

MISSOURI: St. Louis, June 7-9. Exec. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

NEBRASKA: * June 1951. Director, Mr. Oscar F. Humble, Room 1009, State Capitol Bldg., Lincoln.

NEVADA:* Carson City, August 6. Sec., Dr. G. H. Ross, 112 North Curry St., Carson City.

NEW HAMPSHIRE: Concord, Sept. 12-13. Sec., Dr. John Samuel Wheeler, Room 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, June 19-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO:* Santa Fe, Oct. 8-9. Sec., Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 26-29. Sec., Dr. Jacob L. Lochner, Jr., 23 S. Pearl St., Albany 7.

NORTH CAROLINA: *Endorsement.* Raleigh, June 18-21. Sec., Dr. Joseph J. Combs, 419 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, July 4-7. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, June 19-21. *Endorsement.* Columbus, April 3. Sec., Dr. H. M. Platter, 21 W. Broad Street, Columbus.

OKLAHOMA: * *Examination.* Oklahoma City, June 6-7. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON:* *Examination.* Portland, June 21-23. Special examination for physicians who have orders to report for military service about July 1. *Examination.* Portland, July 5-7. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland 4.

PENNSYLVANIA: *Examination.* Philadelphia and Pittsburgh, July 10-13. Acting Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

PUERTO RICO: *Examination.* Santurce, Sept. 4. Sec., Mr. Luis Cueto Coll, Box 3717, Santurce.

RHODE ISLAND:* *Examination.* Providence, July 5-6. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Examination.* Columbia, June 25-27. *Reciprocity.* Columbia, April 2 and May 15. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: Rapid City, July 17-18. Sec., Dr. Clarence E. Sherwood, 109 Center St., West, Madison.

TENNESSEE:* *Examinaiton.* Memphis and Nashville, June 13-14. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis 3.

TEXAS:* *Examination.* Austin, June 14-16. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: Salt Lake City, July 11-13. Asst. Dir., Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

VERMONT: *Examination.* Burlington, June 13-15. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: *Examination.* Richmond, June 14-16. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

VIRGIN ISLANDS: St. Thomas, June 12. Sec., Dr. Earle M. Rice, St. Thomas.

WASHINGTON:* Seattle, July 16-18. Sec., Department of Licenses, Mr. Edward C. Dohm, Olympia.

WEST VIRGINIA: Charleston, July 9-11. Sec., Dr. N. H. Dyer, Capitol Bldg., Charleston 5.

WISCONSIN:* Milwaukee, July 10-12. Sec., Dr. C. A. Dawson, River Falls.

WYOMING: *Examination.* Cheyenne, June 4. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau, August. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: *Examination.* Tucson, June 19. Sec., Mr. Francis A. Roy, Room 427, University of Arizona, Tucson.

COLORADO: *Examination.* Denver, June 6-7. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver. 3.

CONNECTICUT: *Examination.* New Haven, June 9. Exec. Asst., Miss Mary G. Reynolds, State Board of Healing Arts, 110 Whitney Ave., New Haven.

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 22-23. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington.

FLORIDA: *Examination.* Gainesville, June 2. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

IOWA: *Examination.* Des Moines, July 10. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MINNESOTA: *Examination.* Minneapolis, June 5-6. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis 14.

NEVADA: *Examination.* Reno, July 3. Sec., Mr. Frank Robinson, University of Nevada, Reno.

NEW MEXICO: *Examination.* Santa Fe, June 17. Sec., Miss Marguerite Cantrell, Box 1522, Santa Fe.

OKLAHOMA: Oklahoma City, Sept. 14. Sec., Dr. Frank C. Gallaher, 813 Braniff Bldg., Portland 4.

OREGON: *Examination.* Portland, June 2, Sept. 8 and Dec. 1. Sec., Dr. Charles D. Byrne, State Board of Higher Education, University of Oregon, Eugene.

SOUTH DAKOTA: *Examination.* Vermillion, June 15-16. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

TENNESSEE: *Examination.* Memphis, July 5-6. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

TEXAS: *Examination.* Austin, October. Chief Clerk, Mr. B. H. Kirk, 306 Nalle Bldg., Austin.

WASHINGTON: *Examination.* Seattle, July 11-12. Sec., Department of Licenses, Mr. Edward C. Dohm, Olympia.

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* Basic Science Certificate required.

DEATHS

Jones, William Russell ✦ Richmond, Va.; born in Orange County, Va., Jan. 18, 1870; University of Virginia Department of Medicine, Charlottesville, 1892; professor of chemistry, toxicology, and medical jurisprudence from 1897 to 1906, lecturer in clinical medicine and associate professor of medicine from 1906 to 1912 at his alma mater, where he had been a member of the board of directors and a trustee; at one time associated with the U. S. Public Health Service; member of the Richmond Academy of Medicine, Chesapeake and Ohio Association of Railway Surgeons, and the Association of Military Surgeons of the United States; chief surgeon and major in the medical corps of the Virginia National Guard in 1926; formerly consulting medical officer of the U. S. War Risk and Veterans Bureau; served as visiting physician to the Virginia Hospital, as visiting physician to the Retreat for the Sick Hospital, where he had been chief of medical staff, and visiting physician and member of the associate staff of the hospital division of the Medical College of Virginia; surgeon, Chesapeake and Ohio Railway; medical advisor and chief surgeon to the Richmond, Fredericksburg and Potomac Railroad; author of "Abstract of Lectures on Chemistry," 1899, and "A Text Book of Chemistry for Students and Practitioners of Medicine, Dentistry and Pharmacy," 1905; died in a local hospital March 20, aged 81, of acute gastric hemorrhage.

Chambers, William ✦ Vice Admiral, U. S. Navy, retired, La Jolla, Calif.; born in Philadelphia Aug. 25, 1884; Jefferson Medical College of Philadelphia, 1907; commissioned a lieutenant (jg) in the medical corps of the U. S. Navy in 1908; served aboard the *USS Maryland, Lexington,* and *Galveston,* and with the Marine Corps, Atlantic Fleet Marine Expeditionary Forces, 13th Marine Regiment, and the Marine Guard, Peking, China; in 1926 was designated a flight surgeon; in 1933-1934 was a member of the American Scientific Mission to Haiti; medical officer in command of the Naval Hospital, Canacao, P. I., from 1935 to 1938, Naval Medical School, Washington, D. C., from 1938 to 1940, Naval Hospital, San Diego, from 1940 to 1942, and the National Naval Medical Center, Bethesda, Md., from 1944 to 1946; was district medical officer of the 14th Naval District then became inspector of the medical department activities of the Pacific area from 1942 to 1944; for his outstanding duties in this assignment received the Distinguished Service Medal; retired on Nov. 1, 1946; fellow of the American College of Surgeons; died in the U. S. Naval Hospital March 29, aged 66, of cerebral hemorrhage.

Sanderson, Edward Theodore, Alexandria, Minn.; born in Boone, Iowa, April 20, 1875; Bennett Medical College, Chicago, 1905; member of the American Medical Association; formerly professor of anatomy at his alma mater, where he had been secretary and registrar; appointed to the first state advisory commission on tuberculosis in 1917; in 1922 was appointed to the state board of medical examiners and remained on the board until 1932; past president of the Lyon-Lincoln Counties Medical Society; awarded citations and medals from the Presidents of the United States for the examination of selectees in World Wars I and II; served as mayor and councilman of Alexandria and for many years member and president of the school board; on the staff of the Marshall (Minn.) Hospital; died March 16, aged 75, of cerebral thrombosis.

Hirsh, Maurice, Patton, Calif.; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1913; formerly affiliated with Jewish Consumptive Relief Society Sanatorium, Denver; for many years chief resident physician and assistant medical director of Duarte National Medical Center in Duarte; affiliated with Patton State Hospital; served on the staff of the Los Angeles Sanatorium in Duarte, where he died Feb. 27, aged 62, of bronchogenic carcinoma following left pneumonectomy.

✦ Indicates Fellow of the American Medical Association.

Abington, W. H. Beebe, Ark.; Memphis Hospital Medical College, 1896; state senator; also a druggist; died March 19, aged 80.

Althans, Carl ✦ St. Louis; Washington University School of Medicine, St. Louis, 1903; died April 1, aged 69, of myocardial infarction.

Banach, Leon, Jersey City, N. J.; Chicago College of Medicine and Surgery, 1915; died in the B. S. Pollak Hospital for Chest Diseases March 14, aged 65, of coronary thrombosis.

Benn, Ferdinand George ✦ La Mesa, Calif.; Minneapolis College of Physicians and Surgeons, 1903; member of the Minnesota State Medical Association; an Associate Fellow of the American Medical Association; died March 12, aged 72.

Blackwell, Samuel R., Gary, Ind.; Meharry Medical College, Nashville, Tenn., 1913; died in the Methodist Hospital March 4, aged 69, of pneumonia and myocardial failure.

Burnett, James Robinet ✦ Caldwell, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1912; on the staff of the Caldwell General Hospital; died Feb. 23, aged 70.

Chandler, John Franklin, Oregon, Mo.; Kansas City Medical College, 1895; member of the American Medical Association; died in St. Joseph Feb. 19, aged 84, of bronchopneumonia.

Clegg, Earl George, Sheridan, Wyo.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; served on the staff of the Sheridan County Memorial Hospital, where he died March 31, aged 70, of cerebral hemorrhage.

Coffey, J. O., Queen City, Mo.; Missouri Medical College, St. Louis, 1885; for many years member of the school board; died March 25, aged 87.

Conover, Earl, Evansville, Ind.; University of Louisville Medical Department, 1905; served on the staffs of St. Mary's Hospital and the Deaconess Hospital, where he died March 25, aged 72, of cardiovascular renal disease.

Dainty, George Wood ✦ Monument Beach, Mass.; Tufts College Medical School, Boston, 1907; for many years chairman of the school committee in Bourne; on the consulting staff and a director of the Barnstable County Sanatorium in Bourne; on the consulting staffs of the Cape Cod Hospital in Hyannis and Tobey Hospital in Wareham; died March 24, aged 66, of chronic nephritis, uremia and rheumatoid arthritis.

Dougherty, Lewis Edwin, Canton, Ohio; Ohio State University College of Medicine, Columbus, 1924; member of the American Medical Association; died Feb. 20, aged 54, of acute myocardial infarction.

Dowling, Joseph Ivimey, Albany, N. Y.; born in Woodside, N. J., Dec. 22, 1872; New York Homeopathic Medical College, New York, 1895; member of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; specialist certified by the American Board of Ophthalmology; medical health inspector for the health department of New York City from 1896 to 1898; served on the staff of the Memorial Hospital; died March 22, aged 78, of arteriosclerotic heart disease.

Duhamel, Oliver Gilbert, Marlboro, Mass.; School of Medicine and Surgery of Montreal, Canada, 1894; for many years city physician; on the staff of the Marlboro Hospital; died March 28, aged 81, of cerebral hemorrhage.

Dulaney, Henry Kennedy, Aberdeen, Md.; Atlantic Medical College, Baltimore, 1910; member of the American Medical Association; died Feb. 10, aged 69.

Dyas, Thomas C., New York; University and Bellevue Hospital Medical College, New York, 1911; died in the Roosevelt Hospital March 11, aged 77, arteriosclerotic heart disease with aortic stenosis.

Englander, Simon ✠ Cleveland; Western Reserve University Medical Department, Cleveland, 1901; served on the staffs of the Lakeside and St. Vincent Charity hospitals; died March 5, aged 71, of coronary thrombosis.

Enochs, Robert Jones, Hayden, Colo.; Medical Department of Tulane University of Louisiana, New Orleans, 1909; member of the American Medical Association; for many years associated with the Indian Service; resident physician at the Montana State Tuberculosis Sanitarium in Deer Lodge; died in the French Hospital, San Francisco, March 15, aged 68, of cerebrovascular accident.

Face, Edward Gill Jr. ✠ Richmond, Va.; University of Virginia Department of Medicine, Charlottesville, 1941; interned at the University of Virginia Hospital in Charlottesville; served during World War II; died March 6, aged 34.

Fairbanks, Clark Vernon, Dansville, N. Y.; University of Buffalo School of Medicine, 1896; served during World War I; died March 23, aged 78, of cerebral hemorrhage.

Farmer, Robert Allen, Grapeland, Texas; University of Texas School of Medicine, Galveston, 1910; died in Crockett recently, aged 68, of injuries received in an automobile accident.

Fellows, Frederick Brown, Wheaton, Ill.; Chicago College of Medicine and Surgery, 1914; member of the American Medical Association; medical examiner in World War I; died in the Elmhurst Memorial Hospital March 4, aged 85, of ulcer of the duodenum and hiatus hernia.

Flamm, Louis Francis, Muskogee, Okla.; Maryland Medical College, Baltimore, 1902; also a dentist; died in Temple, Texas, Feb. 22, aged 86, of carcinoma of the intestine.

Friis-Holm, Gudrun, Long Beach, Calif.; New York Medical College and Hospital for Women, Homeopathic, 1904; died in the Los Angeles County General Hospital Jan. 15, aged 83, of hemorrhage and carcinoma of the bladder.

Fudema, John Joseph, Chicago; Bennett Medical College, Chicago, 1914; died March 22, aged 63, of coronary thrombosis and hypertension.

Fuller, Frederick Henry, Walpole, Mass.; Harvard Medical School, Boston, 1894; member of the American Medical Association; served as school physician and health officer; died March 9, aged 80, of arteriosclerosis and pneumonia.

Garvin, Luke Denis ✠ Bradford, Pa.; Northwestern University Medical School, Chicago, 1934; served during World War II; affiliated with Bradford Hospital; found in the Allegheny River in Salamanca, N. Y., March 18, aged 48.

Gilfillan, George William ✠ Bloomfield, Iowa; State University of Iowa College of Medicine, Iowa City, 1924; served during World War II; on the staff of St. Joseph Hospital in Ottumwa, where he died March 28, aged 51, of periarteritis nodosa.

Goldwater, Abraham Lincoln ✠ New York; Bellevue Hospital Medical College, New York, 1897; died March 23, aged 79, of cerebral thrombosis.

Grace, John Franklin, Excelsior Springs, Mo.; Medico-Chururgical College of Kansas City, 1903; member of the American Medical Association; served during World War I; member of the city board of health; served on the city council and school board; on the staff of the Excelsior Springs Sanitarium and Hospital; died in the Veterans Administration Hospital, Wadsworth, March 3, aged 72, of carcinoma of the stomach.

Greenleaf, Clarence Albert, Olean, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1896; member of the American Medical Association; past president of the New York State Association of School Physicians; medical director of the school system and director of the county school hygiene service; served during World War I; died in the Memorial Hospital, New York, March 4, aged 78.

Gronoway, Terrence Ponderley ✠ Macon, Mo.; Washington University School of Medicine, St. Louis, 1910; died March 7, aged 63, of coronary thrombosis.

Hanson, Kenneth Boccarde ✠ Cincinnati; University and Bellevue Hospital Medical College, New York, 1930; member of the American Association of Industrial Physicians and Surgeons; fellow of the American College of Surgeons; served during World War II; affiliated with St. Francis, Good Samaritan, Our Lady of Mercy, and St. Mary's hospitals; died in Rome, Italy, March 22, aged 45, of cerebral hemorrhage.

Hartin, David, Spokane, Wash.; McGill University Faculty of Medicine, Montreal, Canada, 1914; member of the American Medical Association and the Pacific Coast Oto-Ophthalmological Society; served overseas with the Canadian Army during World War I; died March 9, aged 59, of coronary occlusion.

Hastings, Seman Wood ✠ Monterey, Calif.; University of Southern California School of Medicine, Los Angeles, 1908; died recently, aged 73, of heart disease.

Haury, Richard Samuel, Newton, Kan.; Northwestern University Medical School, Chicago, 1902; fellow of the American College of Surgeons; served as a member of the state board of health; for many years a director of the Midland National Bank; affiliated with Bethel Deaconess Hospital, where he died March 16, aged 78, of hypertension, arteriosclerosis, and cerebral hemorrhage.

Hay, Gilbert W., Parsons, Kan.; Chicago College of Medicine and Surgery, 1913; member of the American Medical Association; served on the staff of the Mercy Hospital, where he died March 3, aged 74, of cerebral hemorrhage.

Helbing, Arlington, San Angelo, Texas; American Medical College, St. Louis, 1905; member of the American Medical Association; local surgeon for the Santa Fe Railroad; affiliated with Shannon, West Texas Memorial, and St. John's hospitals; died Jan. 24, aged 68, of acute coronary occlusion.

Hibbard, Samuel M., Sabetha, Kan.; Ensworth Medical College, St. Joseph, Mo., 1907; member of the American Medical Association; veteran of World War I; later a lieutenant colonel in the medical reserve corps (not on active duty); served as mayor; on the staff of St. Anthony Murdock Memorial Hospital; died in Veterans Administration Hospital, Topeka, March 7, aged 65, of coronary thrombosis.

Holding, Solomon Pace, Wake Forest, N. C.; Bellevue Hospital Medical College, New York, 1897; at one time mayor of Wake Forest; died March 3, aged 79, of coronary thrombosis.

Holloman, Thomas Bascom, Itta Bena, Miss.; Memphis Hospital Medical College, 1898; member of the American Medical Association; died March 28, aged 76.

Houston, Albert Joshua, Beverly Hills, Calif.; Cooper Medical College, San Francisco, 1898; member of the American Medical Association; clinical professor of otology, rhinology, and laryngology emeritus at the University of California Medical School, San Francisco; died March 28, aged 77.

Howard, John Edgar, Haddonfield, N. J.; Jefferson Medical College of Philadelphia, 1901; member of the American Medical Association; died in the Cooper Hospital, Camden, March 8, aged 75, of coronary thrombosis.

Howe, Warren D., Dorset, Vt.; Chicago Homeopathic Medical College, 1895; died in Daytona Beach, Fla., in March, aged 83, of cerebral thrombosis.

Hoyt, Charles Wentworth ✠ Hingham, Mass.; Harvard Medical School, Boston, 1905; died Feb. 7, aged 71.

Hummel, Leonard Malcolm ✠ Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1934; died Feb. 7, aged 41.

Jacobs, Jay, San Francisco; Cooper Medical College, San Francisco, 1911; member of the American Medical Association; served during World War I; died in the Veterans Administration Hospital March 18, aged 62, of hypertensive encephalopathy.

Jayet, Albert Charles A., Santa Cruz, Calif.; University of Vermont College of Medicine, Burlington, 1889; past president of the Santa Clara County Medical Society; formerly practiced in San Jose, where he was city councilman; died March 11, aged 87.

Johnson, Burke Lamartine, Kenton, Ohio; Cleveland Medical College, Homeopathic, 1896; honorary president and for many years direector and president of the Kenton National Bank; died March 24, aged 77.

Knox, Charles Albert ✦ Ridgefield Park, N. J.; Baltimore Medical College, 1904; died in the Hackensack (N. J.) Hospital March 9, aged 72, of coronary thrombosis.

Knudson, Theodore James, Springfield, Ill.; Northwestern University Medical School, Chicago, 1895; died April 14, aged 82.

Lartigau, August Jerome ✦ Ojai, Calif.; University of California Medical School, San Francisco, 1896; fellow of the American College of Surgeons; an Associate Fellow of the American Medical Association; formerly on the staff of Children's Hospital in San Francisco; died in St. Francis Hospital, Santa Barbara, March 14, aged 76, of pneumonitis and arteriosclerotic heart disease.

Matteson, Herman Howard, Los Angeles (licensed in Wisconsin in 1900); surgeon of exploring parties in Central America, ship's surgeon, and surgeon at a federal penitentiary; died March 18, aged 76, of ruptured esophageal varix.

Mendenhall, William E. ✦ Indianapolis; State College of Physicians and Surgeons, Indianapolis, 1907; died Feb. 20, aged 80, of coronary embolism.

Morrill, Leonard Brown ✦ Center Harbor, N. H.; University of Vermont College of Medicine, Burlington, 1888; died March 17, aged 85, of chronic myocarditis.

Page, Willifred, Ellis, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1907; served during World War I; died in Veterans Administration Center, Wichita, recently, aged 73, of arteriosclerotic heart disease.

Palisch, Gotthilf A., Agency, Mo.; Homeopathic Medical College of Missouri, St. Louis, 1896; died in Cape Girardeau March 15, aged 75, of acute coronary thrombosis and chronic myocarditis.

Plimpton, Robert Pearson, Denison, Iowa; Chicago Homeopathic Medical College, 1900; died in Riverside Hospital, Jacksonville, Fla., March 10, aged 79, of congestive heart failure and rheumatic fever.

Puckett, Charles Logan, St. Louis; St. Louis College of Physicians and Surgeons, 1904; member of the American Medical Association; died March 30, aged 72, of heart disease.

Rath, Otto A., Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1886; for many years associated with the Memorial Hospital, where he died March 9, aged 86.

Riker, John Lawrence, Rumson, N. J.; Columbia University College of Physicians and Surgeons, New York, 1930; served during World War II; died in Fair Oaks Sanatorium in Summit, Feb. 26, aged 46, of coronary thrombosis.

Rosier, John Bruner, Clarksburg, W. Va.; Jefferson Medical College of Philadelphia, 1900; died March 29, aged 78, of chronic endocarditis.

St. Clair, Frank Peter, Salt Lake City; John A. Creighton Medical College, Omaha, 1895; veteran of the Spanish-American War; died March 23, aged 78, of coronary occlusion.

Sargent, Susan Barbara Tallmon, Berkeley, Calif.; Northwestern University Woman's Medical School, Chicago, 1902; died Feb. 21, aged 78.

Scherer, Carl Ahrendt ✦ Marysville, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1907; health officer of the Sutter-Yuba Bi County Health Unit; formerly health officer of St. Louis County, Minn., and director of rural health unit No. 4 of the Minnesota State Board of Health; died Feb. 12, aged 69, of common duct obstruction.

Scruggs, Elroy, Paris, Tenn.; Vanderbilt University School of Medicine, Nashville, 1913; member of the American Medical Association; chairman of the board of directors of the Federal Savings and Loan Association; died March 17, aged 71, of coronary occlusion.

Sisk, Clarence Frank ✦ Zanesville, Ohio; Ohio State University College of Medicine, Columbus, 1926; past vice president and president of the Muskingum County Academy of Medicine; president of the county board of health; died Feb. 22, aged 50.

Smith, Edward Needham ✦ Oklahoma City; born in Creston, Wash., Oct. 18, 1902; University of Pennsylvania School of Medicine, Philadelphia, 1927; clinical professor of obstetrics at the University of Oklahoma School of Medicine; specialist certified by the American Board of Obstetrics and Gynecology; member of the Central Association of Obstetricians and Gynecologists; obstetric consultant, Oklahoma State Department of Health; affiliated with Wesley, Mercy and University hospitals; died Feb. 26, aged 48, of coronary disease.

Smith, Wallace P., Waupun, Wis.; Northwestern University Medical School, Chicago, 1893; died in Beaver Dam recently, aged 82, of diabetes mellitus and arteriosclerosis.

Spencer, Clay, St. Joseph, Mo.; St. Louis University School of Medicine, 1903; died in the State Hospital No. 2 Feb. 19, aged 71, of cerebral hemorrhage.

Syfert, Alva Clyde, Arkansas City, Kan.; University of Kansas School of Medicine, Kansas City, 1915; died Feb. 15, aged 64, of chronic lymphatic leukemia.

Tetrick, Paul Wyckoff, Mason, Ohio; Medical College of Ohio, Cincinnati, 1904; member of the American Medical Association; on the courtesy staff of the Fort Hamilton Hospital and Mercy Hospital in Hamilton, where he died March 11, aged 70, of cholelithiasis and myocarditis.

Tindall, Herbert Frederick, Pasadena, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1924; certified by the National Board of Medical Examiners; died March 27, aged 52, of bronchopneumonia and generalized lymphosarcoma.

Tyson, Robert Stafford, Frederick, Md.; Hahnemann Medical College and Hospital of Philadelphia, 1902; member of the American Medical Association; on the staff of the Frederick Memorial Hospital; died in the University Hospital, Baltimore, March 23, aged 73, of pneumonia.

Wade, Charles Ernest, Santa Maria, Calif.; University of Oregon Medical School, Portland, 1897; died in Santa Barbara March 5, aged 81, of heart disease.

Walsh, Ford Cooper, Kansas City, Mo.; State University of Iowa College of Medicine, Iowa City, 1894; served during World War I; died in the Veterans Administration Center, Leavenworth, Kan., March 29, aged 78, of carcinoma of the prostate.

Wendt, Charles Isaac, Pittsburgh; Hahnemann Medical College and Hospital of Philadelphia, 1895; served during World War I; on the staff of the Shadyside Hospital; died March 5, aged 79, of arteriosclerotic heart disease.

Wiencke, Edward John ✦ Schenectady, N. Y.; Albany (N. Y.) Medical College, 1896; member of the American Trudeau Society; past president of the Schenectady County Medical Society; formerly tuberculosis clinician in the health department; served during World War I; past president and member of the board of Glenridge Sanatorium; honorary staff member of the Ellis and St. Clare's hospitals; died March 4, aged 76, of lobar pneumonia.

Wood, Howard J., Rockville Centre, N. Y.; Albany Medical College, 1885; died March 31, aged 89, of arteriosclerosis and uremia.

Yarbrough, Henry L., Tunica, Miss.; Memphis (Tenn.) Hospital Medical College, 1894; died Jan. 7, aged 86.

Young, Edmond Brooks, Vardaman, Miss.; University of Nashville (Tenn.) Medical Department, 1906; member of the American Medical Association; died in the Houston (Miss.) Hospital March 13, aged 68, of heart disease.

Zugg, Clarence Logan, Arkansas City, Kan.; College of Physicians and Surgeons, Medical Department of the Kansas City University, 1902; University of Kansas School of Medicine, Kansas City, 1912; member of the American Medical Association; on the staffs of St. Margaret's and Bethany hospitals in Kansas City; died in the Memorial Hospital, Arkansas City, March 9, aged 76, of myocardial infarction.

GOVERNMENT SERVICES

SELECTIVE SERVICE SYSTEM

OPERATIONS BULLETIN NO. 30

ISSUED: APRIL 9, 1951

AS AMENDED: MAY 16, 1951

SUBJECT: **Special Registrants Completing Internships or Residencies in June 1951**

1. A doctor of medicine or dentistry can perform his service in the armed forces with the least inconvenience to himself and with the least dislocation of medical programs in communities and hospitals immediately following the end of his period of internship or residency. Most internships and residencies are terminated on or about the 30th of June of each year.

2. It is the policy of the Department of Defense not to call to active duty an officer of the Medical Corps Reserve, except in the case of a bona fide volunteer, unless the Medical Advisory Committee concerned certifies that he is currently available for military service. Therefore, the Office of the Surgeon General of the Army has informed this Headquarters that the Army is declining to offer commissions to special registrants unless the registrant has been classified in Class I-A or Class I-A-O and the State Director of Selective Service verifies the fact that the registrant's file contains information submitted by the Medical Advisory Committee concerned indicating that the registrant is considered to be currently available for military service.

3. After a special registrant applies for a commission some time is required to complete his processing. Normally, orders placing reserve officers on active duty must be obtained at least thirty (30) days prior to the date of entry upon active duty. In order that a special registrant who desires to enter military service immediately after completion of his internship or residency training may be in a position to do so without loss of time while awaiting the completion of his processing for a commission and receipt of orders to active duty, local boards are requested to take the following actions:

(a) Those special registrant physicians in the first priority now serving internships or residencies in hospitals who are in Class I-A or Class I-A-O should be advised by the local boards to apply for a commission at the earliest possible date unless they have already done so by answering Item 30 of DD Form No. 390 in the affirmative.

(b) Each special registrant physician in the first priority who is now deferred to complete his internship or residency and whose file contains information submitted by the Medical Advisory Committee concerned recommending that the registrant be considered available for military service on or about June 30, 1951, and who the local board expects to reclassify in Class I-A or Class I-A-O should be promptly so reclassified. If the registrant has not been physically examined and found acceptable within the previous 180 days, the local board shall forward him to the armed forces joint examining and induction station for physical examination and determination of acceptability. As soon as the registrant has been reclassified, the local board should advise the Commanding General of the appropriate Continental Army through the State Director of Selective Service that the registrant is in Class I-A or Class I-A-O and that his file contains the recommendation of the Medical Advisory Committee that he be considered available for service.

(c) Those special registrant physicians in the first priority who have answered Item 30 of DD Form No. 390 in the negative and who have been examined and found acceptable and those registrants who were offered commissions and declined them should each now be offered an opportunity to apply for a commission by signing the following application addressed to the Commanding General of the appropriate Continental Army:

> "I do hereby now apply for a commission in the Medical Corps Reserve of one of the Armed Forces of the United States."

This statement should be signed by the registrant in the presence of a witness and should be delivered to his local board. If the registrant has answered Item 30 of DD Form No. 390 in the negative, the local board should attach to the application for commission Standard Form 89, the original and one copy of Standard Form 88, and the original and one copy of DD Form No. 390 pertaining to the subject registrant. All of these documents should be forwarded to the Commanding General of the appropriate Continental Army through the State Director of Selective Service. If the registrant was offered a commission and declined it, the application for commission without other papers, should be forwarded to the appropriate Commanding General through the State Director.

(d) Each special registrant physician in the first priority classified as available for service who applies for a reserve commission and who either has not been physically examined or was so examined more than 180 days previous to such application should, without delay, be forwarded for physical examination in accordance with the provisions of Part 1650 of the Selective Service Regulations.

ARMY

The Order of the Boar.—The 24th annual dinner of the parent chapter of the Order of the Boar will be held June 9 at the Medical Field Service School, Brooke Army Medical Center, Fort Sam Houston, Texas. The Order of the Boar originated in 1928 at the Medical Field Service School when it was at Carlisle Barracks, Pa., and now has about 2,500 members. Active branches of the organization are located also at Walter Reed Army Hospital, Washington, D. C., Camp McCoy, Wis., and Chicago, Ill. Membership in the Order is limited to officers of the armed services, both regular and reserve, who are interested in preventive medicine.

Outbreak of Gastro-Enteritis.—The Division of Preventive Medicine, Office of the Surgeon General, reports that in an outbreak of acute gastro-enteritis at Fort Meade, Md., on May 17, a total of 389 men were sick enough to report to the dispensary, and 10 are known to have become ill on a bus after leaving the post. Of these men, 102 were hospitalized. Epidemiological evidence indicates that the vehicle of infection was corned beef hash. The incubation period varied from one to six hours. A Staphylococcus was isolated from vomitus, but this organism has not yet been incriminated as a toxin producer. None of the hash was available for laboratory examination.

Awards and Commendations.—The Silver Star was recently awarded to Capt. Robert T. Jensen, Minneapolis. The citation reads in part as follows:

"Capt. Robert T. Jensen, Medical Corps, Seventh Infantry, Third Infantry Division, United States Army. During the night of Nov. 28-29, 1950, near Sackangni, Korea, a battalion of the Seventh Infantry was under strong attack from an estimated two enemy regiments. Captain Jensen, battalion surgeon, heedless of his own safety, continued medical attention to the wounded although enemy artillery, mortar, and small arms fire necessitated placing his aid station and most of its personnel underground. In the morning he called for helicopter evacuation of a wounded man. The enemy directed concentration of fire on the helicopter, but Captain Jensen unhesitatingly accompanied the patient across open ground and supervised loading the wounded man into the helicopter. Captain Jensen's gallantry and devotion to duty reflect great credit on himself and the military service."

Captain Jensen graduated from the University of Minnesota School of Medicine in 1948.

FOREIGN LETTERS

ITALY

Gastroduodenal Ulcer and Work.—Professors Torraca, Palmieri and Rodino reported on "Gastroduodenal Ulcer and Work." Professor Torraca pointed out that duodenal ulcer occurs more frequently than gastric ulcer and there is a higher incidence of the disease among men than among women. In addition to the patient's occupation, mental and physical fatigue, irregular meals, and nutritional deficiency must be taken into consideration. Surgical treatment may consist in pyloroduodenoantral resection, in some palliative operations when resection cannot be performed, or in resection of the gastric fundus according to Connell, devascularization of the stomach according to Hey, and bilateral vagotomy. Torraca obtained excellent results with gastric resection in 506 cases of gastric and duodenal ulcers and in 42 cases of anastomotic ulcer.

Professor Rodino discussed the late results of operations for gastroduodenal ulcer. In a follow-up of patients in whom gastrojejunostomy was performed at the surgical clinic of the University of Naples, he observed 43% complete recoveries, while in 57% of the cases various disturbances were still present. A control examination made more recently showed that cases of complete recovery have increased to 66%. The late results obtained with gastric resection are generally excellent, with completely favorable outcome in 75% of the cases and good results in 22%. There has been complete return to normal of the working capacity in 88% of the cases and partial return in 12% of the patients who underwent gastrojejunostomy, while in the cases in which resection was performed, there was complete recovery in 91.75% and partial recovery in 8.25%. There was complete recovery in 58% of the patients doing heavy manual work, while complete recovery occurred in 78% of patients performing lighter work.

Professor Palmieri discussed the relation between gastroduodenal ulcer and work. When gastroduodenal ulcer is considered as an accident occurring during work, it is necessary to keep in mind the topographic and chronologic criteria, the qualitative and quantitative efficiency of the moment in which it is presumed that the accident occurred, and the clinical history of the patient. The diagnosis should be definite, differentiating ulcer caused by superficial laceration of the mucosa from hemorrhagic gastritis. The evaluation of the injury caused by the accident varies according to the general condition, the type of work, the operability, and the complications. Whether gastroduodenal ulcer may be considered as a professional disease, caused by lead or mercury poisoning, is a subject of controversy.

In some cases, the ulcer is considered as an occupational disease, especially when it is due to prolonged standing, to excitement or to inadequate diet. Statistical data are controversial, however. With respect to the criteria of injury entitling the victim to disability pension, it is necessary that existing symptoms, the general condition, the kind of work, and the operability be evaluated.

Deficient Diet.—Nutritional deficiency was discussed by Professors Sotgiu and Panzini. Professor Sotgiu stressed the physiological concepts for appraisal of minimal and excellent nutrition; he divided the deficiencies according to etiogenetic factors, such as poverty and gastrointestinal disturbances, according to etiology in its true sense, i. e., total or partial deficiency of proteins, fats or vitamins, and according to the clinical aspects.

Deficiencies in workers may or may not be related to their work. A generic syndrome of malnutrition or special syndromes that comprise essentially the deficiencies of vitamins and minerals may exist. The generic syndrome prevails in workers.

Professor Panzini discussed the importance of nutritional deficiency, stressing especially the stage in which the undernourished subject, although not having acquired yet a definite disease, is no longer in good health. Besides emaciation and muscular changes, a nervous factor may exist, with increased chronaxia and mental changes. Edema and osteopathy are frequent; the skin and the endocrine glands manifest changes; a hypoglycemic syndrome is frequent. Company-paid lunches may aid in the prevention of nutritional deficiency through qualitative and quantitative caloric intake.

Pathology of the Choledochus and of the Ampulla of Vater.—At the medical academy Filippo Pacini of Pistoja, Professor Salotti of the University of Siena presented a report on a biliary syndrome due to pathologic changes in the choledochus and the ampulla of Vater, approaching this subject from the roentgenologic point of view. Recent preoperative and postoperative cholangiographic observations have revealed pathologic pictures which explain certain biliary syndromes and prompt the consideration of the importance of the area of the ampulla of Vater as a clinical anatomic complex.

Anatomically the region comprises the duodenal papilla, the transversal and longitudinal folds and the ampulla of Vater, the antrums of the bile duct and of the pancreatic duct. It also comprises a small opening through which the common bile duct reaches the papilla running obliquely and with a reduced caliber within the duodenal wall, where muscular bands form the sphincter of the choledochus, while another group of muscular bands surrounds the choledochus and the pancreatic duct, constituting what is properly called the sphincter of Oddi. The sphincter of Balli has a function antagonistic to that of the sphincter of Oddi, namely, that of opening the papillary orifice. Sometimes anatomic and anatomicoroentgenologic changes of the area take place, which concern the varied structures of the papilla and the various ways the bile ducts empty.

Recently Rocchi, Professor Salotti's pupil, demonstrated on the duodenum of cadavers the difficulty of obtaining the picture of the ampulla of Vater and the duodenal papilla as may be observed in living persons. This has led to the conclusion that, in the determination of certain pictures, the functional component occasionally assumes even greater importance than the anatomic one. Choledochographies with rapid serialograms show the various functional phases of the antrum of the choledochus, the spincter of Oddi, and of the duodenum in full synergy.

Work and Diabetes.—This subject was presented by Professors Vesce, Di Prisco and Pisani. Professor Vesce discussed the etiopathogenesis of diabetes in relation to work, pointing out that, in the development of diabetes, the factor of work should be considered not only as an exclusive expression of muscular and cerebral activity but also as a summation of physiological, mental and hygienic factors linked with the worker's task. The environment and the working materials are also of importance. Professor Vesce believes that work increases the blood sugar level in severe diabetes, but not all authors share this opinion. Carbohydrate diet is of great importance. Insulin in general increases the hypoglycemia already induced by work in patients with mild diabetes.

Professor Di Prisco discussed employment of diabetic patients. The diabetic patient may become incapacitated by clinical complications, which are more frequent in certain professions, i. e., ocular complications in patients engaged in visual work; vascular complications in businessmen, shoemakers, and farmers; cutaneous sequelae in waiters, brick layers, and farmers, and nervous complications in railroad employees and goldsmiths. It is necessary that workers be examined for diabetes in order that adequate treatment may be instituted early.

Professor Pisani spoke of the relations between diabetes and trauma, pointing out that, while traumatic diabetes is rare, hyperglycemia and glycosuria may be observed after trauma of whatever kind and site. The speaker affirmed that, in order to define the occasional relation between diabetes and trauma, one must demonstrate that the diabetic syndrome did not exist before the

The items in these letters are contributed by regular correspondents in the various foreign countries.

trauma occurred; one must be aware of the lesions derived from trauma which may have involved the glycoregulatory system, and must ascertain whether it is real diabetes or extrainsular simple glycosuria and hyperglycemia.

Congress on Occupational Medicine.—The 16th national Congress on Occupational Medicine was held in Naples under the chairmanship of Professor Castellino. Before the congress started, Professor Grasso-Biondi lectured on "Distant Effects in Occupational Pathology," dealing especially with effects of trauma. He discussed the cases in which the discontinuity between the primary and the secondary focus of the lesions is only an apparent one, and how the connection occurs through the vessels, by means of either the blood elements or the central nervous system.

SWITZERLAND

Swiss Antituberculosis Association.—Progress in the treatment of pulmonary tuberculosis has been so important, in recent years, that the Swiss Antituberculosis Association chose as the main subject of its 1951 meeting (31st scientific meeting, Berne, April 13-14), a program aimed to make clear what has improved the treatment of this disease. One of the most interesting subjects was the treatment of the tuberculous cavity of the lung by the method of Dr. G. Maurer (Davos). In his lecture, Dr. Maurer projected a film to show the delicate details of the nonsurgical speleotomy and better to acquaint the group with a method that aroused great enthusiasm as well as criticism. An animated discussion followed this lecture. It seems that the nonsurgical speleotomy is an interesting way of curing the tuberculous cavity, but it has very limitated indications. The difficult technique of this method and the minutiae of a treatment which must last for several months are obstacles to the general use of nonsurgical speleotomy. It seems, also, that in most cases a thoracoplasty must eventually be performed to maintain good results. G. Maurer himself, as well as Prof. J. Hein (who represented the German Society of Tuberculosis), Dr. Good, Dr. de Ridder (Bruxelles), and Prof. W. Catel (Mammolshöhe) believe, however, that the method can be used on a wider scale and often without complementary thoracoplasty. On the other hand, Drs. Arnold (Leysin), Rubin (Davos), Tanner (Arosa), Gruninger (Lucerne) and Mordasini (Berne) think that nonsurgical speleotomy can be used only in exceptional cases and that its results are rather uncertain. Mordasini prefers even the endocavitary drying up according to Monaldi, which permits easier closing of the bronchus. This is also the opinion of Prof. Omodei Zorini, head of the Forlanini Institute of Rome. The main objection to Dr. Maurer's method is that the closing of the bronchus is rarely attained, despite all the techniques used, and the healing of a cavity of the lung is secured only when the bronchus is really closed.

The meeting of Saturday, April 14, was devoted to different communications. Drs. Wissler and Widmer (Davos) talked on the prognosis of pulmonary tuberculosis with cavities in children at puberty. The mortality rate, in open pulmonary tuberculosis, at this age, is no higher than in adults, contrary to general opinion. In the realm of therapeutics, Drs. Staubli and Regli (Montana) stated that paraaminosalicylic acid, given intravenously, drop by drop, can, in high dosage, have an action like that of streptomycin. This meeting was honored by the presence of Professor di Paola, from Rome, who had the same day demonstrated his technique of thoracoplasty in the Inselspital of Berne.

Prof. Henry Sigerist.—Henry E. Sigerist, celebrated his 60th birthday on April 7, 1951. As professor and head of the Institute of the History of Medicine of the famous Johns Hopkins University, he taught this branch to several generations of students. Prof. Sigerist is the author of numerous publications; In Zurich, he founded, in conjunction with G. A. Wehrli, the *Zürcher medizingeschichtliche Abhandlungen;* in Baltimore, he started the *Bulletin of the History of Medicine.* A few years ago, Professor Sigerist left Baltimore for the idyllic village of Pura (Ticino), where he pursues, in his library of over 10,000 volumes, the writing of his "History of Medicine," which will be published in eight volumes, the first of which has just been published.

TURKEY

Vaccinal Encephalomyelitis.—Ord. Prof. Ihsan Hilmi Alantar of Istanbul University children's department and his associate, Dr. Metine Bilger, reported an increase in postvaccinal encephalomyelitis. There were nine cases within three months; two occurred after mumps, three after influenza, two after measles, one after whooping cough and one after smallpox vaccination; two patients died. Four patients were 6, 12, 14 and 17 months old, respectively, and five were 3 to 12 years old. Though the associated infection varied, there was an obvious similarity in clinical and laboratory findings. In a 14 month old patient, a temperature of 42 C. (107.6 F.) developed 10 days after smallpox vaccination. She was admitted to the hospital in coma, having had convulsions for the previous 10 hours. The eyes had rolled upward; reflexes were brisk, and there was no stiffness of the neck. Spinal puncture produced a clear liquor. The Pandy test was positive, and microscopic examination revealed 36 lymphocytes per field. The patient died three hours later.

A 17 month old patient had influenza and angina for a month prior to admission. The fever persisted. During the week before admission vomiting occurred, movement in the right arm and leg was impaired, and the patient became comatose. On admission the patient had a temperature of 38 C. (100.4 F.); the pulse rate was 120; the right reflexes were brisk, and the left reflexes were normal. Corneal reflexes were absent, the Babinski sign was present on both sides. Spinal puncture yielded a clear fluid. The result of the Pandy test was positive, and microscopic examination revealed 32 lymphocytes per field. Cultures were negative. For four days the patient had three to four convulsions, each lasting five minutes. The patient died on the fourth day. The other seven patients recovered in one week to 35 days.

Brucellosis Diagnostic Standard Agglutination. — Sait Bilal Golem, D.V.M., secretary general of the Ankara Refik Saydam Institute of Hygiene, has published his investigations of brucellosis made at the institute. With the antigen obtained from the Department of Agriculture Veterinary Institute at Weybridge, England, experiments have been made at the Refik Saydam Institute of Hygiene and at the Ankara-Etlik Veterinary Biologic Institute with Professor Stableforth's standard serum, with the Refik Saydam institute rabbit serum, and with the Ankara-Etlik institute dry serum. It was found that the Weybridge Institute, the Refik Saydam Institute, and the Ankara-Etlik Institute antigens corresponded but the Stableforth antigen was less agglutinable.

Placental Graft in Eye Diseases.—Dr. Nuri Fehmi Ayberk, chief of the ophthalmology department of the Haidar Pasha Model Hospital-Istanbul, reports good results obtained in eye diseases with placental grafts, a method of therapy first used by Filatoff (Russia) in 1946. Of the 24 patients (14 women and 10 men, 16 to 83 years old) four patients had retinal detachment, three had chronic glaucoma, four had retinitis pigmentosa and 13 patients had different types of neuroretinopathy. In some patients, grafts the size of a pea were placed under the upper conjunctiva, and in some patients this technic was supplemented with placenta extract injections. The placenta, which had been aseptically removed by cesarean operation, was kept at — 2 C. for five to six days; the graft was removed from the center of the placenta. The grafts were repeated two or three times after an interval of two months. In the patients with retinitis pigmentosa, the graft improved central vision 1 to 1.5; adaptation to darkness slightly improved a week after the graft. In patients that had been followed for several months, continued good results were obtained. In patients with neuroretinopathy the results were also good. In younger patients and in patients with inflammatory conditions the results obtained were twice as good as in older patients and in those with conditions of degenerative origin. The graft had no beneficial effect on patients with optic atrophy of long duration. In several cases of retinal detachment, the results obtained with the placental graft were so satisfactory that an operation became unnecessary and there was further improvement after the second graft. In patients with chronic glaucoma, the graft did not result in marked improvement; however, in one of these patients, front and side vision was attained.

According to Filatoff the distintegration substances, rather than the hormone and vitamin content of the placenta, produce the stimulating effect on the physiological functions.

BRAZIL

Priority for BCG Vaccination.—Antituberculosis work in Brazil started in 1941, and the National Campaign Against Tuberculosis was founded in 1946. This campaign has a modern, scientific aspect, and it has made a new division of zones of the country. This campaign has started working toward an increase in the number of beds, and the number has grown significantly. At the same time the campaign has been trying to spread the application of BCG vaccination, and there has been an increase in the distribution from 125,000 vials in 1945 to 571,637 in 1949. During the present administration the number of beds for tuberculous patients has been raised from 2,844 in 1944 to 7,153 in 1950 in the state of São Paulo. The expense of medical assistance and hospitals in the state of São Paulo and in the entire country suggests that other more up to date methods, such as BCG vaccination, should be used in the fight against tuberculosis.

In June 1950, there were 375,329 persons vaccinated with BCG in São Paulo. The exceptional conditions in this state, due to a large number of institutions, make it possible to carry out BCG vaccination on a large scale and to enforce Federal Law 484, which requires a certificate of this vaccination in various periods of the life of citizens.

Drs. Nogueira Martins and Pedral Sampaio, of the Liga Paulista contra la Tuberculose, suggest that priority be given to BCG vaccination, among the measures to be carried out in countries that have conditions similar to those of Brazil. Their experience over a period of 15 years with a large number of observations confirmed radiologically and clinically shows favorable results obtained with BCG vaccination in children who live in contagious areas.

MISCELLANY

THE NATIONAL CANCER INSTITUTE

Prepared by George F. Connery of the A. M. A. Washington Office

The National Cancer Institute clearly is one of the world's great centers for research on neoplastic disease.

It is one of seven organizations grouped together at Bethesda, Md. as the National Institutes of Health, but its influence extends to every state and to several foreign countries. Congress has rapidly increased the institute's annual appropriation to the point where it now totals approximately 40 times the average appropriation for the first seven years of the institute's existence. The current total budget of the National Cancer Institute is just over $20,000,000. Only about $4,650,000 is being spent for administration, publications, research, demonstrations and consultations. All the rest goes out in grants: to states for cancer control, to institutions for research and construction of facilities and to individuals to finance specialized training.

The National Cancer Institute was created by Congress in 1937. It has set for itself two major goals: ". . . first, to increase basic knowledge of cancer and, second, to increase the application of our present knowledge of how to prevent cancer deaths." Effort is directed four ways: (1) research in the institute's own laboratories, (2) grants to stimulate and support cancer research in other institutions and by individual scientists, (3) studies and demonstrations in the public health phases of cancer control and (4) training grants to medical and dental schools for undergraduate instruction. Dr. John R. Heller is the director. Responsibilities are divided among three branches and a technical services department, or administrative clearing house.

The Research Branch, supervised by Dr. Heller in the absence of a scientific director, is NCI's own laboratory, where scientists carry on scores of projects aimed at learning more about cancer. At the same time the Research Branch supplements and stimulates the work of private individuals and organizations whose cancer projects are financed by NCI grants. The Research Branch covers a wide range. The research sections, and their operations, as described by NCI are as follows:

The Epidemiology Section (Dr. Alexander G. Gilliam, chief) investigates influences which may be associated with presence or absence of cancer in humans. Case histories of a large number of women with breast and cervical cancer currently are being analyzed, along with controls, to determine whether the two groups differ in any significant respect. A similar study is being made of the relationship between lung cancer and such factors as occupation and smoking.

The Chemotherapy Section (Dr. Murray J. Shear, chief) prepares and investigates chemical substances of possible value in treating human cancer. As a preliminary, screening of about 3,000 drugs and compounds was completed in 1950; about 150 were found to damage test tumors in mice. Clinical research is under way with alpha-peltatin and beta-peltatin, two compounds discovered by this section's scientists in a plant extract.

The Endocrinology Section (Dr. Roy Hertz, chief) investigates the role of hormones in cancer causation, of vitamins in stimulating effect of hormones and in use of hormones and antivitamin substances in treating cancer. A water-soluble form of female sex hormone has been developed; this can be injected directly into the blood stream, making possible much higher blood levels of hormone in breast and prostatic cancer patients than previously attainable. In addition, observations on the favorable effects of progesterone in cervical cancer have offered a therapeutic lead.

The Biochemistry Section (Dr. Jesse P. Greenstein, chief) investigates chemical differences between normal and cancer tissue, looking toward new approaches to therapy. Projects include comparative metabolism enzyme studies; comparison of proteins, fats and other tissue components common to normal and malignant states, and studies of metabolism and nutrition of normal and cancer tissues, using isotopes as tracers. This section worked out techniques for mass-producing all essential amino acids for intravenous feeding. Applying this process, several commercial firms now are preparing to market amino acids at greatly reduced prices.

The Biophysics Section (Dr. Egon Lorenz, chief) studies biologic effects of penetrating radiations, as a means of inducing cancer and as a form of treatment. One important finding is that systematic effects seem to play a significant role in radiation treatment of a transplanted mouse lymphosarcoma. Irradiation of the tumor alone has little effect, but when the whole body is irradiated with the same dose as given to the tumor alone a profound regression of the tumor is noted. Also, it was learned that when the spleen is protected by a lead shield, the whole body irradiation dose could approximately be doubled, with the result that the transplanted tumor did not recur in about 70 per cent of the animals.

The Pathology Section (Dr. Harold L. Stewart, chief) explores and evaluates the transformation in cells and tissues as cancer develops and becomes established. Various tumors similar to those in man are induced in experimental animals by chemical carcinogens, and the histopathogenesis of these tumors is studied during all stages of development. Current interest is focused on eliciting and defining the earliest neoplastic changes and in correlating them with those occurring in human beings. For example, the development of induced carcinoma of the cervix in mice and spontaneous cervical cancer in women are being followed by cervical smears and the processes compared.

The Biology Section (Dr. Howard B. Andervont, chief) studies the problems of growth, differentiation and cell physiology by means of tissue culture, transparent chambers in mice and other techniques. Researchers have demonstrated that the thymus gland is implicated in mouse leukemia, probably as a bridge between the leukemia stimulus and the disease. In certain strains of mice, total removal of the thymus prevented leukemia in most of the animals.

A total of 377 persons are employed in the research branch, which for the current year will spend $3,537,000, all to further NCI's own projects, none going for grants. Opportunities for

this branch will be greatly increased with completion, probably in 1952, of the Clinical Center at Bethesda, where 125 beds will be reserved for selected cancer patients.

The Grants and Fellowships Branch, with Dr. R. G. Meader as chief, handles grants to nonfederal institutions and individuals for support of research and of research facilities and training. These grants total almost $9,000,000 this year, but more than half is earmarked for payments on construction projects authorized by Congress over the past three years to increase clinical and laboratory space and equipment for cancer research. There is no money this year for new construction grants. The $16,303,000 previously authorized has been allocated to 47 hospitals, medical schools and cancer research institutions in 27 states and the District of Columbia.

Research supported by the grants program covers most of the wide area of investigation dealing with the causation of tumors, with their growth and dependence on or independence of the rest of the body and with special attempts to develop better diagnostic and therapeutic methods. The function of the branch is to stimulate cancer research and to disseminate knowledge about it. Close liaison is maintained with the American Cancer Society and all other agencies that make grants to support cancer research. Although there are no legal or governmental ties between ACS and the institute, a constant exchange of information insures correlation of government and private programs. The society's board usually contains an official of the institute, and ACS representatives in turn are brought in as institute consultants.

Cancer research funds, like all those awarded for research by the Public Health Service, are not distributed geographically or by population. As an example, institutions in one state (New York) in 1950 received $579,632, or 20.4 per cent of the research grant money appropriated that year, whereas another (Oregon) received only $5,400, or 0.2 per cent of the total.

According to NCI, these figures reflect the situation in each state. Oregon has only one research application, and it was granted in full. New Yorkers asked for considerably more, but not all was granted. The number and dollar value of research grants is said to be in fairly close proportion to the total requested, from state to state, and to the research potential of a region.

In general, the policy has been to support work in recognized cancer research centers where prompt productivity can be expected, while the long range effort is to plant as much money as possible in other areas where it might kindle interest in cancer work, particularly fundamental research.

Through the Cancer Control Branch (Dr. R. F. Kaiser, chief) NCI maintains contact with states, assisting their cancer control activities with demonstrations, consultations and educational programs as well as grants. In amount of grant money distributed ($7,000,000 this year), the Control Branch is second only to the Research Grants Branch. Its staff numbers about 50. The largest single item in its budget is the $3,200,000 set aside for use of states in their campaigns to detect and control cancer. Under the law, the maximum a state health department may receive is established by the population-income-cancer incidence formula, which makes more money available per capita to relatively poor states. The same two states, New York and Oregon, which were used as examples of uneven distribution of cancer research funds are examples of what happens when cancer control funds are passed out. New York's population is about 10 times that of Oregon, yet it received 100 times as much money for cancer research grants. But for control work, New York got only eight and one-half times as much money as Oregon, which meant that the federal government actually was spending more money per capita to help control cancer in Oregon than it was in New York.

Cancer control is the most important program over which the National Advisory Cancer Council does not have jurisdiction. Allocation is made by the staff and director of the Control Branch, on recommendations by a 10 member Cancer Control Committee, established administratively. Represented on the committee are state health departments, medical schools, the American Cancer Society, the American College of Surgeons and other organizations.

Dr. Noka B. Hon, head of the State Aid Section, emphasized that every effort is made to have the physician become the "key man in every situation where federal cancer control funds are expended." Dr. Hon noted that every cancer control program aided by federal funds must have the prior approval of the local medical society, and that patients may be hospitalized for not to exceed three days, and for diagnostic purposes only.

Operating under the Control Branch is a section devoted to studies in environmental and occupational cancer—one area where demonstrable progress has been made. Dr. W. C. Hueper is chief of the Cancergenic Studies Section Control Branch.

Also a part of the Control Branch, under the direction of Dr. J. E. Dunn, is the effort to develop satisfactory cancer diagnostic tests, whose purpose is the detection of possible cancer in mass groups of the public. In work on diagnostic tests and environmental and occupational cancer, NCI's scientists cooperate with state officials, with nongovernment organizations and with researchers who are individually pursuing projects related to these fields. This branch also distributes grants to medical and dental schools to stimulate and coordinate the teaching of cancer control and detection and to stimulate interest in research methods. This year $2,040,000 is being spent on this program, with 78 of the country's 79 medical schools participating. Four-year schools get $25,000, two-year schools $5,000. The Cancer Council passes on these. A total of about $2,000,000 is being spent by the Control Branch this year on these additional programs: demonstrations and consultations, $275,000 (the Cancer Control Committee advises on this program, but neither it nor the Council passed on individual projects), and special projects (recommended by the Advisory Council) $929,000; clinical traineeships for physicians, $372,000 (physician gets $10 a day, must spend at least half time on cancer work; Council establishes policies, but screening is done by staff groups).

The general public, and particularly the medical profession, are represented in management of National Cancer Institute through the National Advisory Cancer Council. By law the council is authorized to review research projects or programs and to recommend prosecution of those it considers promising; to collect information on cancer research going on anywhere, by personal investigation if necessary; to review applications for research grants; to recommend acceptance of conditional gifts to the NCI, and in general to advise the Surgeon General of PHS on all operations of NCI.

The council now is composed of 15 members, with the Surgeon General as chairman. Until recently membership was nine, with the six appointed members "leading medical or scientific authorities . . . outstanding in the study, diagnosis or treatment of cancer." The chief medical officer of Veterans Administration and a medical officer designated by the Secretary of Defense also serve on the council as ex-officio members, making, with the Surgeon General, a total of 15 members. The four-year appointments are made by the Surgeon General, with approval of the Administrator of the Federal Security Agency. The Surgeon General can act only on the recommendation of the council on (*a*) research grants, (*b*) grants to medical and dental schools, (*c*) special projects and (*d*) construction grants. The council is not authorized to act in fellowship or clinical traineeship grants or grants to states under the control program.

The council meets three times a year. Prior to the meetings, applications are screened by study sections, made up of experts in the particular field, primarily nongovernmental but generally including representatives of the Veterans Administration, the Public Health Service and usually one of the military services. Study sections are concerned with the scientific merits of a particular project, rather than its importance relative to competing projects. However, the sections place a priority on each application. It is the duty of study groups to assemble all essential information for the benefit of the council, visiting the applicant if necessary to round out their information. Assisting each study group is an executive secretary (a trained PHS scientist). Generally, according to Dr. Meader, the study group has

its report in the hands of each member of the council about one month before council meetings.

The council determines its own method of procedure as well as the length of its meetings. Dr. Meader said the council approves about 60 per cent of the applications. He also noted an increasing tendency for the study groups and the council to apply the same criteria. They disagree now on about one grant in 10; they formerly diagreed on one in four.

Records show that in only one case has the Surgeon General rejected a project approved by the council. Later information showed that other government funds were supporting a similar project. This close agreement is brought about through advance staff work and the fact that the Surgeon General, who has final veto power, participates in council deliberations.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Governmental Hospital: Liability to Pay Patient for Agent's Negligent Acts.—The plaintiff sued for damages for personal injuries resulting from the alleged negligence of the defendant hospital while she was a paying patient therein. From a trial court ruling in favor of the defendant, the plaintiff appealed to the Supreme Court of Appeals of West Virginia.

The defendant hospital was created by a 1943 statute authorizing the County Court of Monongalia County to establish, equip and maintain a hospital to be known as Monongalia General Hospital. The controlling question, said the Supreme Court of Appeals, is whether the defendant hospital is a public corporation and is engaged in the performance of a governmental function. The plaintiff contended that in the operation of the hospital, under the statute, and in accepting and treating her as a patient for hire, the defendant was not engaged in the discharge of a governmental function, but acted in a proprietary capacity and is liable for the damages caused by the negligence of its agents and employees. The defendant hospital insisted that it is a public corporation, that in the operation of the hospital it was engaged in the performance of a governmental function, and that it is immune from liability for the negligence of its officers, agents and employees.

It is obvious, said the court, that the defendant is a public corporation. Its trustees were incorporated and the hospital was established by the statute. The title to the hospital property, by the terms of the statute, is vested in the County Court of Monongalia County, which holds the property of the county, a political subdivision of the State, for the benefit of the county or its citizens and inhabitants, in trust for public purposes. Furthermore, continued the court, the contention of the plaintiff, that the operation of the hospital by the defendant, when she, a paying patient, was injured, was for profit and in a proprietary capacity instead of in the performance of a governmental function, is not well founded. Neither the public character of the defendant nor the nature of its operation was changed or affected by the payment of dues or charges for the treatment which the plaintiff received as a patient. Numerous decisions of the appellate courts of other jurisdictions so hold and in a prior West Virginia case the Supreme Court of Appeals said: "The fact that one is a paying patient does not alter the [general] rule. Such patient is the recipient of the donors' gratuity only in a lesser degree than one who makes no payment. The hospital building, with its equipment, management, and its great possibilities for the alleviation of suffering, was provided by charity. In using the organization made possible and supported by that charity, a paying patient, to that extent, benefits by the charity."

Continuing, the Supreme Court of Appeals said that the basic test in determining whether a public corporation, in its operations, is engaged in the discharge of a governmental function or is acting in a propriety capacity is whether the act performed is for the common benefit of the public or is for the special benefit or profit of the corporation. It is clear beyond question, the court concluded, that the operation and the maintenance of its hospital by the defendant are for the common benefit of the public generally and are not for the special benefit or the private gain or profit of the defendant, the trustee, or the County Court of Monongalia County.

In cases involving liability of a hospital for the negligence of its officers and agents, the character of the particular institution, whether it is public, charitable, or private, is important for the reason that legal principles which apply to a public hospital are different from those applicable to a hospital operated and maintained for private gain or profit. A former West Virginia case, in recognizing the distinction between a private hospital and a public hospital with respect to such liability, used this language: "The policy of the law forbids liability of a state or municipal hospital for negligence of its servants and physicians; it being a governmental agency." The plaintiff insists, however, that the language of the statute which charges that the defendant hospital board shall be a corporation and may sue and be sued, authorizes this action. The argument is not persuasive. The provision that a corporation may sue and be sued does not create a cause of action or impose liability for its negligence or confer upon a person injured by such negligence the right to maintain an action for damages against it. The authority conferred upon a public corporation by statute to sue and be sued does not render it liability for acts for which no liability is imposed by law. Accordingly the judgment in favor of the defendant hospital was affirmed.—*Shaffer v. Monongalia General Hospital, 62 S.E. (2d) 795 (West Virginia 1950).*

MEDICAL MOTION PICTURES

The Male Sex Hormone: 16 mm., color, sound, showing time 22 minutes. Produced by Sturgis-Grant Productions, Inc., 314 East 46th St., New York 17. Sponsored by and procurable on loan from Schering Corporation, 2 Broad St., Bloomfield, N. J.

This motion picture begins with a brief exposition of the historical interest in the subject and leads up to our present day knowledge of anatomy and physiology of the male genital organs. The relation of the pituitary gonadotropin, LH or ICSH, and the production of testosterone is shown by animation; a brief section on steroid chemistry is also given. The physiologic effects of the use and the lack of testosterone are discussed. Types of hypogonadism in early and late years are shown with pictures of certain cases seen in the clinic. A typical course of testosterone therapy in a 15 year old boy is described in detail, and the patient's progress is followed. The fact that androgen therapy is assuming importance in the field of gynecology is mentioned, and certain important metabolic effects following testosterone administration are briefly discussed.

The film introduces two controversial subjects. The first occurs in the discussion of the use of the hormone in the treatment of the male. The Council on Pharmacy and Chemistry does not recognize testosterone for treatment of the male climacteric, nor is the use of the hormone recognized for the treatment of circulatory symptoms. In the film, the use of testosterone is advocated for dysmenorrhea; this also is not recognized. All other indications mentioned are acceptable and the film itself is an excellent presentation of the physiologic background for the production of the male sex hormone and of its effect. However, the use of the trocar for the introduction of pellets is not universally accepted, since bleeding may occur in the area of insertion of the trocar and prevent absorption of the pellets. Therefore, many prefer the purely surgical approach of making an incision, stopping all bleeding, inserting the pellets and closure by surgical methods.

Although this film may be of general interest to the medical profession, it cannot be entirely recommended in its present form. The photography and narration are very good.

POSTGRADUATE CONTINUATION COURSES FOR PHYSICIANS

Compiled by the Council on Medical Education and Hospitals for the Period July 1, 1951 to Jan. 15, 1952

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Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	ALLERGY		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	6 Month Personal Course in Allergy	By appointment, full time	$500.00
	1 Month Personal Course in Allergy	1st of every month, full time	200.00
	Personal Course in Allergy and Related Conditions	September 26, 10 weeks, part time	125.00
Wayne University College of Medicine, 1512 St. Antoine, Detroit 26, Mich.			
At: Receiving Hospital	Allergy Clinic and Conference	September, 12 weeks, part time	25.00
Columbia University, 630 W. 168th St., New York, N. Y.			
At: Mt. Sinai Hospital	Medicine PM 36 Allergy	November 26-December 10, part time	40.00
At: Montefiore Hospital	Medicine PM 68 Allergy	September 13-December 6, part time	50.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y. [23]			
At: Beth El Hospital	Allergy I	October, 9 sessions, part time	30.00
At: Kings County Hospital	Allergy II	October, 9 sessions, part time	20.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Allergy	Arranged, 2 months, part time	50.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.			
At: University Hospital	5415-A Allergy	September 17-October 5, full time	225.00
At: Bellevue and University Hospitals	599-A Allergy for Otolaryngologists	November 5-December 14, 6 weeks, part time	75.00
University of Pittsburgh School of Medicine, 3941 O'Hara St., Pittsburgh, Pa.	Allergy Clinic and Laboratory	October 15-20, full time	100.00
	ANATOMY		
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Surgical Anatomy	October 3-June 4, part time	100.00
Stanford University School of Medicine, 2398 Sacramento St., San Francisco, Calif.			
At: Stanford Hospital	Surgical Anatomy	September 10-14, part time, afternoons	75.00 plus $20.00 lab. fee
	Surgical Anatomy	September 10-14, part time, mornings	75.00 plus $20.00 lab. fee
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Anatomy of the Extremities on the Cadaver	October 3, 10 sessions, part time	125.00
University of Maryland School of Medicine, Lombard and Greene Sts., Baltimore, Md.	General Anatomy	Arranged	Arranged
	Surgical Anatomy	January 29-June 9, part time	150.00
	Anatomy of Head and Neck as Applied to EENT	October 1-February 28, part time	75.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11, Mass.	Surgical Anatomy	October 15-December 7, 8 weeks, part time	250.00
Wayne University College of Medicine, 1512 St. Antoine, Detroit 26, Mich.	Surgical Anatomy [27]	January, 24 weeks, part time	70.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Applied Anatomy for the General Surgeon	Arranged, 250 hours	375.00
	Anatomy of the Thorax	Arranged, 100 hours	150.00
	Anatomy of the Abdomen	Arranged, 100 hours	150.00
	Applied Anatomy for the Otolaryngologist	Arranged, 150 hours	275.00
	Applied Anatomy of the Urogenital System	Arranged, 130 hours	300.00
	Applied Anatomy for the Anesthetist	Arranged, 125 hours	275.00
	Anatomy for the Orthopedic Surgeon	Arranged, 100 hours	150.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Surgical Anatomy	Arranged, 2 weeks, part time	150.00
	Head and Neck Dissection	Arranged, 4 weeks, part time	150.00
	Surgical Anatomy of Nose and Accessory Sinuses	Arranged, 4 weeks, part time	150.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.	411-A Anatomy of the Head and Neck	September 24-December 14, 12 weeks, part time	90.00
	412-A Anatomy of the Thorax and Its Viscera	January 2-March 21, 12 weeks, part time	90.00
	413-A Anatomy of the Abdomen	September 24-December 14, 12 weeks, part time	90.00
	413-B Anatomy of the Abdomen	January 2-March 21, 12 weeks, part time	90.00
	414-A Anatomy of the Female Pelvis	September 24-December 14, 12 weeks, part time	90.00
	415-A Anatomy of the Genitourinary System	January 2-March 21, 12 weeks, part time	90.00
	416-A Anatomy of the Musculoskeletal System	January 2-March 21, 12 weeks, part time	90.00

References will be found on page 599.

Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	ANESTHESIOLOGY		
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif. University of Southern California, University Park, Los Angeles 7, Calif. At: Los Angeles County Hospital	Anesthesiology	Every 2 months, 4 months, full time	$200.00
	Anesthesia 2801	Continuously, 1st of any month, one month, full time	100.00
	Anesthesia 2802	Continuously, arranged, 3 months, full time	300.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Practical 2 Week Course in Spinal and Intravenous Anesthesia	Every 2 weeks by appointment, full time	150.00
	Practical 1 Month Course in Nitrous Oxide and Ether Anesthesia	1st of every month, by appointment, full time	125.00
	Practical 1 Month Course in Ether, Nitrous Oxide, Ethylene and Cyclopropane Anesthesia	1st of every month, by appointment, full time	200.00
	Practical 2 Week Course in Endotracheal Anesthesia	Every 2 weeks, by appointment, full time	150.00
Essex County Medical Society, 38-40 Clinton St., Newark, N. J. At: Newark City Hospital	Regional Anesthesiology	Arranged, 10 sessions, part time	100.00
New York State Society of Anesthesiologists, 137 W. 11th St., New York 11, N. Y. At: Various Hospitals in N. Y. State	Anesthesiology	Continuously, hours arranged	None
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Anesthesia PM 30, Diagnostic and Therapeutic Nerve Blocking	October 16-November 16, part time	50.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: St. Catherine's Hospital	Diagnostic and Therapeutic Nerve Blocking	October, 6 weeks, part time	75.00
At: Jewish Hospital	Anesthesiology	October, 6 weeks, part time	30.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Clinical Anesthesiology	Arranged, 3 months, full time	200.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Applied Anesthesia	October and January, 3 months, full time	300.00
	Anesthetic Technique	October and January, 6 weeks, full time	100.00
	Regional and Spinal Anesthesia	October and January, 6 weeks, full time	100.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: Bellevue Hospital	511-A Anesthesiology (for Specialists)	Any Monday, September through June, 2 weeks, full time	150.00
	512-A Regional Anesthesiology	September 4-15, 2 weeks, full time	200.00
	512-B Regional Anesthesiology	January 7-18, full time	200.00
	513-A Anesthesiology	September 4, arranged, 12 months	700.00
	514-A Anesthesiology	September 24-December 14, full time [28]	300.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa. At: Graduate Hospital and Private Offices	Anesthesiology	October to May, full time	800.00
	Regional Anesthesia	September 10-22, full time	200.00
	Segmental Neuralgias, Relief by Regional Anesthesia	Arranged, 3 weeks, full time	200.00
	ARTHRITIS		
The Surgeon General's Office, Dept. of the Army, Washington 25, D. C. At: Army and Navy General Hospital, Hot Springs National Park, Ark.	Arthritis and Allied Rheumatic Diseases [11,11b]	November 5-9, full time	None
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: Jewish Hospital	Arthritis	October, 8 sessions, part time	30.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: University Hospital	5414-A Arthritis and Allied Rheumatic Disorders	July 9-20, full time	90.00
	5414-B Arthritis and Allied Rheumatic Disorders	October 29-November 9, full time	90.00
	BACTERIOLOGY		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Review of Microbiology (Bacteriology) a Basic Course	October 4, 5 sessions, part time	75.00
Duke University School of Medicine, Durham, N. C. At: Duke University and Hospital	Medical Mycology	July 2-28, full time	50.00
	BASIC SCIENCE		
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Basic Science Courses, Neurology and Neurosurgery, Otolaryngology, Surgery and Surgical Specialties	October 1-June 7, 8 months, full time	800.00
Michael Reese Hospital Postgraduate Medical School, 29th St. and Ellis Ave., Chicago 16, Ill.	Application of Physiology and Biochemistry to Medicine	October 3-March 28, 25 sessions, part time	150.00
University of Maryland School of Medicine, Lombard and Greene Sts., Baltimore 1, Md.	Basic Sciences as They Apply to Obstetrics and Gynecology	January, 20 weeks, full time	375.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Basic Science: Pathology, Otolaryngology, Pediatrics, Radiology, Surgery, Urology, Internal Medicine, Anesthesiology, Obstetrics and Gynecology	October, 9 months, full time	710.00 [9]
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Basic Medical Sciences	October to May, full time	800.00
University of South Dakota, School of Medicine, Vermillion, S. D.	PG Basic Science Course	September, 5 months, full time	75.00
	BIOCHEMISTRY		
Essex County Medical Society, 38-40 Clinton St., Newark, N. J. At: Nurses Home, Newark City Hospital	Biochemistry	Weekly, 14 sessions, part time	100.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: Beth El Hospital	Clinical Biochemistry	October, 10 sessions, part time	30.00
University of Texas Postgraduate School of Medicine, 207 A Hermann Professional Bldg., Houston, Texas At: M. D. Anderson Hospital for Cancer Research	Metabolism of Amino Acids and Related Substance	September 27-January 17, 15 sessions	15.00

References will be found on page 599.

Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
CARDIOVASCULAR DISEASE			
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Cardiology	January 8-March 11, 10 weeks, part time	$ 50.00
University of Southern California, University Park, Los Angeles 7, Calif.			
At: Los Angeles County Hospital	Cardiology and Vascular Disease ‡882 [29]	September 17, 12 months, full time	100.00
Stanford University School of Medicine, 2398 Sacramento St., San Francisco, Calif.			
At: San Francisco Hospital	Cardiology	September 10-14, part time	75.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Personal Course in Cardiovascular Diseases	September 19, 10 sessions, part time	80.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass.			
At: Beth Israel Hospital	Cardiology 1	January 28-May 10, full time	500.00 [16]
At: Boston City Hospital	Cardiology 2	October 31-January 16, 12 sessions, part time	75.00 [16]
At: Peter Bent Brigham Hospital	Clinical Heart Disease	July 2-31, full time	200.00 [16]
At: Massachusetts General Hospital	Cardiovascular Disease	October 1-September 30, 12 months, full time	800.00 [16]
Essex County Medical Society, 38-40 Clinton St., Newark, N. J.			
At: Seton Hall Campus, South Orange, N. J.	Cardiology	Weekly, 15 sessions, part time	100.00
	Cardiac Arrhythmias	Weekly, 10 sessions, part time	100.00
At: Newark City Hospital	Vascular Diseases, Medical and Surgical Treatment	Weekly, 12 sessions, part time	75.00
New Jersey Academy of General Practice, Collingswood, N. J. [29]			
At: St. Michael's Hospital, Newark, N. J.	Cardiology for the General Practitioner	30 sessions, part time	None
St. Francis Sanatorium for Cardiac Children, Roslyn, N. Y.	A Course of Seminars on Modern Concepts Regarding the Nature and Treatment of Rheumatic Fever and Rheumatic Heart Disease	Once a month, October-May, part time	No fee
Columbia University, 630 W. 168th St., New York, N. Y.			
At: Mt. Sinai Hospital	Medicine PM 29, Clinical Cardiology	October 17-December 19, part time	45.00
	Medicine PM 31, Cardiovascular Diseases	October 19-December 15, part time	125.00
	Medicine PM 46, Bedside Clinics in Heart Disease	October 15-December 3, part time	30.00
	Medicine PM 48, Bedside Diagnosis and Treatment of Heart Disease	October 9-December 11, part time	45.00
At: Montefiore Hospital	Medicine PM 60, Cardiology I	September 27-June 5, full time	300.00
	Medicine PM 62, Cardiology II	September 18-January 22, part time	150.00
	Medicine PM 63, Cardiology III	September 25-February 5, part time	200.00
New York Medical College, Flower and Fifth Ave. Hospitals, 29 E. 105th St., New York 29, N. Y.	Cardiology	Arranged, 20 sessions, part time	150.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Diagnosis and Treatment of Diseases of the Heart	Arranged, 3 weeks, part time	75.00
New York State Department of Health, 76 State St., Albany 1, N. Y.			
At: Medical Schools Throughout the State	Cardiovascular Disease	Throughout academic year, 3 days to 4 weeks	Not given
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.			
At: University Hospital	5417-A Cardiology	October 22-26, full time	75.00
At: Beth Israel Hospital	731-A Cardiovascular Diseases	September 20-December 13, 12 sessions	50.00
	731-B Cardiovascular Diseases	January 10-March 27, 12 sessions	50.00
New York Academy of Medicine, 2 East 103d St., New York, 29, N. Y.	Disorders of the Circulatory System	October 8-19, 2 weeks, full time	10.00
Cleveland Area Heart Society, 417 Public Square Bldg., Cleveland 13, Ohio			
At: Western Reserve University School of Medicine	Resuscitation of Patients Who Die in the Operating Room	September 21-22, October 19-20, November 16-17, December 14-15, January 18-19	40.00 [29]
American College of Physicians, 4200 Pine St., Philadelphia 4, Pa.			
At: Massachusetts General Hospital, Boston	Recent Advances in the Treatment of Cardiovascular Disease	November 12-17, full time	30.00 mbrs. A.C.P. 60.00 non-mbrs.
At: Frank E. Bunts Educational Institute of the Cleveland Clinic Foundation, Cleveland, O.	Diagnosis and Treatment of Cardiovascular Disease	October 22-28, full time	30.00 mbrs. A.C.P. 60.00 non-mbrs.
At: University of Texas School of Medicine	Cardiovascular Diseases	December 10-15, full time	30.00 mbrs. A.C.P. 60.00 non-mbrs.
Hahnemann Medical College and Hospital of Philadelphia, 235 N. 15th St., Philadelphia 2, Pa.	PG Course in Cardiology	October-May, part time	100.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Cardiology	October and January, 8 weeks, part time	80.00
DERMATOLOGY AND SYPHILOLOGY			
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Dermatology	January 2-March 19, part time	40.00
University of Southern California, University Park, Los Angeles 7, Calif.			
At: Los Angeles County Hospital	Dermatology and Syphilology ‡860 [29]	September 17, 12 months, full time	1,000.00
Stanford University School of Medicine, 2398 Sacramento St., San Francisco, Calif. [49]			
At: Stanford Hospital	Practical Dermatology	September 10-14, part time	75.00
	12 Month Clinical Course in Dermatology	By appointment, full time	1,000.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Intensive 2 Weeks Course in Dermatology	October 15, full time	100.00
	Clinical Refresher Course in Dermatology	Every Monday, full time, 2 or more weeks	75.00 2 wks. 125.00 4 wks.
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass.			
At: Massachusetts General Hospital	Dermatology and Syphilology I	October 1-September 30, 12 months, full time [19]	800.00 [16]
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11, Mass.	Dermatology I	November 5-9, full time	40.00

References will be found on page 599.

Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
DERMATOLOGY AND SYPHILOLOGY—Continued			
Wayne University College of Medicine, 1512 St. Antoine, Detroit 26, Mich.	Dermatopathology	September, 12 weeks, part time	850.00
	Seminar in Dermatopathology	Quarterly, 12 weeks, part time	15.00
	Seminar in Dermatology	Quarterly, 12 weeks, part time	15.00
	Superficial Mycoses	December, 12 weeks, part time	30.00
At: Receiving Hospital	Dermatology for General Physicians	December 14-15, full time	15.00
University of Minnesota, Center for Continuation Study, Minneapolis 14, Minn.	Courses in Exfoliative Cytology (Cancer Detection)	September 17-December 14, 3 months	300.00
Cornell University Medical College, 1300 York Ave., New York 21, N. Y.	Dermatology PM 60, Common Skin Diseases and Treatment	October 8-December 10, part time	40.00
Columbia University, 630 W. 168th St., New York, N. Y.	Dermatology PM 61, Relation of Skin to Internal Medicine	September 17-January 14, part time	55.00
At: Montefiore Hospital			
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23]	Diagnosis and Treatment of Common Skin Diseases	October, 8 sessions, part time	20.00
At: Beth El Hospital	Dermatology and Syphilology for the General Practitioner (Seminar)	Arranged, 5 days, full time	75.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Dermatology and Syphilology for Specialists (Seminar)	Arranged, 5 days, full time	75.00
	Dermatologic Histopathology (Seminar)	Arranged, 5 days, full time	75.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.	Training for Specialization in Dermatology and Syphilology	October 1, 3 years, full time	1,000.00
	522-A Seminar in Dermatology and Syphilology	January 14-18, full time	100.00
At: Bellevue and University Hospitals	524-A Dermatology and Syphilology for Pediatricians (Specialists)	September 10-14, full time	100.00
	525-A Dermatology and Syphilology	October 1-September 27, 12 months, full time	700.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Dermatology-Syphilology	October to May, full time	800.00
University of Texas Postgraduate School of Medicine, 207 A Hermann Professional Bldg., Houston, Texas			
At: Robert B. Green Memorial Hospital	Common Diseases of the Skin	October 26, 10 sessions	10.00
At: M. D. Anderson Hospital for Cancer Research	Common Diseases of the Skin	December 3, 5 sessions	5.00
At: Shannon West Texas Memorial Hospital	Common Diseases of the Skin	December 13, 5 sessions	5.00
DIABETES			
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Personal Course in Medical and Surgical Diabetes	September 12, 10 weeks, part time	80.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass.	Diabetes Mellitus in Relation to General Medicine	October 8-12, full time	50.00[18]
At: New England Deaconess Hospital			
Columbia University, 630 W. 168th St., New York, N. Y.	Medicine PM 38, Course in Nutrition and Diabetes	November 29-December 13, full time	40.00
At: Mt. Sinai Hospital			
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23]	Complications of Diabetes Mellitus	October, 12 sessions, part time	20.00
At: Jewish Sanitarium and Hospital for Chronic Diseases			
ELECTROCARDIOGRAPHY			
Delaware Academy of General Practice, Wilmington, Del.	Electrocardiographic Interpretation[18]	Sept. 12, 8 sessions, part time	Not given
At: Wilmington General Hospital	2 Week Personal Course in Electrocardiography and Heart Disease	July 16 and October 22, full time	150.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Personal Course in Electrocardiography and Heart Disease	October 3, 10 weeks, part time	125.00
	Electrocardiography	August 20-September 1, full time	150.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16, Ill.	Electrocardiography	November 26-Dec. 8, 2 weeks	100.00
Tulane University School of Medicine, 1430 Tulane Ave., New Orleans, La.	Electrocardiography I	December 3-7, full time	40.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11, Mass.	Electrocardiography II	January 14-16, full time	25.00
University of Michigan Medical School, Dept. of Postgraduate Medicine, Ann Arbor, Mich.	Electrocardiographic Diagnosis	August 27-September 1, full time	75.00
Essex County Medical Society, 38-40 Clinton St., Newark, N. J.	Unipolar Lead Electrocardiography	Arranged, 12 sessions, part time	75.00
	Electrocardiography	Arranged, 15 sessions, part time	100.00
At: Seton Hall Campus, South Orange, N. J.	Clinical Electrocardiography	Arranged, 12 sessions, part time	100.00
At: Newark City Hospital, Newark, N. J.	Advanced Clinical Electrocardiography	Arranged, 10 sessions, part time	100.00
Columbia University, 630 W. 168th St., New York, N. Y.	Medicine PM 41, Intensive Course in Elementary Electrocardiography	September 17-22, full time	60.00
At: Mt. Sinai Hospital	Medicine PM 42, Intensive Course in Advanced Electrocardiography	September 24-29, full time	60.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23]	Electrocardiography for the General Practitioner	October, 6 weeks, part time	30.00
At: Jewish Hospital	Basic Electrocardiography	October, 6 weeks, part time	20.00
At: Beth El Hospital	Electrocardiography	Fall, 2 weeks, part time	100.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Electrocardiographic Interpretation	Arranged, 2 weeks, part time	75.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.			
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.	5423-A Electrocardiography	September 24-28, full time	75.00
At: University Hospital	732-A Electrocardiography	September 20-December 13, 12 sessions	35.00
At: Beth Israel Hospital	732-B Electrocardiography	January 10-March 27, 12 sessions	35.00
American College of Physicians, 4200 Pine St., Philadelphia 4, Pa.			
At: Emory University School of Medicine, Emory University, Ga.	Electrocardiography	October 29-November 3, full time	30.00 A.C.P. Mbrs. 60.00 non-mbrs.
University of Washington School of Medicine, Seattle 5, Wash.	Electrocardiography	July 19-21, full time	80.00

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Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
ELECTROENCEPHALOGRAPHY			
Columbia University, 630 W. 168th St., New York, N. Y. At: Columbia-Presbyterian Medical Center	Neurology PM 2, Clinical Electroencephalography and Electromyography	3 months, starting October 1 and January 2, full time	$150.00
At: Mt. Sinai Hospital	Neurology PM 33, Clinical Electroencephalography	October 4-January 17, part time	60.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: Bellevue Hospital	642-A Electroencephalography	Arranged, 8 weeks, part time	300.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Electroencephalography	Arranged, 2 weeks, full time	200.00 [15]
ENDOCRINOLOGY			
Stanford University School of Medicine, 2398 Sacramento St., San Francisco, Calif. At: Stanford Hospital	Endocrinology	September 10-14, part time	75.00
Chicago Medical Society, 30 N. Michigan Ave., Chicago, Ill. At: Thorne Hall, Chicago	Endocrine and Metabolic Disorders	October 15-19, full time	60.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16, Ill.	Diseases of the Endocrines, Physiology and Diagnostic Methods	July 9-20, full time	100.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass. At: Massachusetts General Hospital	Pediatric Endocrinology	October 1-6, full time	75.00 [16]
Essex County Medical Society, 38-40 Clinton St., Newark, N. J. At: Seton Hall Campus, South Orange, N. J.	Endocrinology	Arranged, 6 sessions, part time	40.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Medicine PM 39, Endocrinological Diseases	October 18-November 8, full time	30.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[29] At: Jewish Sanitarium and Hospital for Chronic Diseases	Recent Advances in Endocrinology	October, 7 weeks, part time	30.00
At: Jewish Hospital	Disorders of the Endocrine System	October, 7 weeks, part time	40.00
	Gynecologic Endocrinology	October, 10 sessions, part time	20.00
At: Beth El Hospital	Endocrine Disorders in Children and Adolescents	October, 8 sessions, part time	20.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y. New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.	Endocrinology	Arranged, fall, 2 weeks, full time	100.00
At: University Hospital	5422-A Endocrinology	July 23-27, full time	60.00
	5422-B Endocrinology	November 12-16, full time	60.00
Association for the Study of Internal Secretions, 1200 N. Walker St., Oklahoma City, Okla. At: Olympic Hotel, Seattle, Wash.	PG Assembly in Endocrinology Including Diabetes	July 2-7, full time	75.00
ENDOSCOPY			
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	10 Day Practical Course in Cystoscopy	July 9, 23, August 6, 20, September 10, October 8, 22, November 5, 26, January 7	150.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass. At: Massachusetts General Hospital	Endoscopy	July 1-June 30, throughout the year by arrangement, 3 months or longer, full time	375.00 [16] 3 months 125.00 each additional month
Columbia University, 630 W. 168th St., New York, N. Y. At: Columbia-Presbyterian Medical Center	Medicine PM 2, Gastroscopy	Arranged, 2 months, part time	250.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Gastroscopy	Arranged, 2 weeks, part time	200.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Gastroscopy (Advanced)	Arranged, 5 weeks, part time	200.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: Bellevue and University Hospitals	Bronchoscopy	Arranged, 4 weeks, part time	150.00
	595-A Bronchoscopy, Esophagoscopy and Surgery of the Larynx and Neck [30]	January 14-25, full time	200.00
Temple University School of Medicine, 3400 N. Broad St., Philadelphia 40, Pa.	Bronchoesophagology	Fall, 2 weeks, full time	250.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Laryngeal Surgery	Fall, 2 weeks, full time	250.00
	Bronchoesophagology, Gastroscopy and Laryngeal Surgery	September and January, 2 weeks	250.00
FORENSIC MEDICINE			
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: Bellevue Hospital	531-A Forensic Medicine	September 24, 9 months, full time [31]	700.00
FRACTURES			
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Intensive 2 Week Course in Fractures and Traumatic Surgery	October 8, full time	125.00
	Special Course in Fractures	October 10, 10 sessions, part time	125.00
	Clinical Course in Fractures	1st of every week, 1 or 2 weeks full time	50.00 1 wk. 100.00 2 wks.
State University of Iowa College of Medicine, Iowa City, Iowa	Fractures	October, 1 day	Not given
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass. At: Massachusetts General Hospital	Treatment of Fractures and Other Traumatic Conditions	October 22-31, full time	150.00 [16]
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Fractures and Allied Trauma	Fall, 4 weeks, full time	200.00
GASTROENTEROLOGY			
University of Southern California, University Park, Los Angeles 7, Calif. At: Los Angeles County Hospital	Gastroenterology 2844	September 17, 12 months, full time	1,000.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	2 Week Personal Course in Gastroscopy and Gastroenterology	July 16, September 10, October 22, full time	200.00
	2 Week Course in Gastroenterology	October 15, full time	100.00
	Personal Course in Gastroenterology	September 12, 10 sessions, part time	100.00

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Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	GASTROENTEROLOGY—Continued		
Wayne University College of Medicine, 1512 St. Antoine St., Detroit 26, Mich. At: Receiving Hospital	Gastroenterology	Quarterly, 12 weeks, part time	$ 15.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Montefiore Hospital	Medicine PM 70, Gastroenterology	September 18-January 22, part time	75.00
National Gastroenterological Association, 1819 Broadway, New York, N. Y. At: Drake Hotel, Chicago	Course in Postgraduate Gastroenterology	September 20-22, full time	Not given
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: Jewish Hospital	Gastroenterology	October, 6 weeks, part time	20.00
At: Greenpoint Hospital	Diarrheal Diseases	October, 10 sessions, part time	20.00
New York Medical College, Flower and Fifth Ave. Hospitals, 29 E. 106th St., New York 29, N. Y.	Gastroenterology	October, 8 weeks, part time	30.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: University Hospital	Gastroenterology	Arranged, 1 month, part time	100.00
University of Oregon Medical School, 3181 S. W. Sam Jackson Park Rd., Portland 1, Ore.	5421-A Gastroenterology	October 15-26, full time	115.00
American College of Physicians, 4200 Pine St., Philadelphia 4, Pa. At: Tulane University School of Medicine, New Orleans, La.	Gastroenterology	October 22-26, full time	50.00
	Gastroenterology	November 12-17, full time	30.00 A.C.P. Mbrs. 60.00 non-members
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Gastroenterology	October to May, full time	800.00
	GERIATRICS		
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Medicine PM 47, Geriatrics	October 4-January 24, part time	65.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: Bellevue and University Hospitals	5426-A Geriatrics	November 7-9, full time	40.00
	HEMATOLOGY		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Personal Course in Hematology	September 19, 10 sessions, part time	100.00
	1 Week Personal Course in Hematology	June 25, full time	100.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16, Ill.	Hematologic Diagnosis	July 23-August 4, full time	100.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11, Mass.	Hematology I	December 10-14, full time	40.00
Wayne University College of Medicine, 1512 St. Antoine, Detroit 26, Mich.	Beginning Hematology	September, 12 weeks, part time	50.00
	Advanced Hematology	December, 12 weeks, part time	50.00
	Blood	December, 24 weeks, part time	90.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Medicine PM 35, Hematology	October 16-December 11, part time	60.00
	Medicine PM 67, Advanced Hematology	September 18-January 15, part time	75.00
At: Montefiore Hospital	Medicine PM 66, Clinical Hematology	September 11-February 5, part time	75.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: Jewish Hospital	Clinical Hematology	October, 8 weeks, part time	20.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: Bellevue and University Hospitals	546-A Clinical Hematology	October 1-December 8, 10 sessions	40.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa. At: Bryn Mawr Hospital, Bryn Mawr, Pa.	Clinical and Laboratory Hematology	October and December, 6 weeks, full time	200.00
University of Washington School of Medicine, Seattle 5, Wash.	Hematology	September 10-14, full time	50.00
	HISTOLOGY		
New York Medical College, Flower and Fifth Ave. Hospitals, 29 E. 106th St., New York 29, N. Y.	Histology	Arranged, 5 weeks, full time	300.00
	INDUSTRIAL MEDICINE		
University of Minnesota, Center for Continuation Study, Minneapolis 14, Minn.	Industrial Medicine for General Physicians	September 17, 1 day	10.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: University Hospital	483-A Industrial Medicine	September 24-September 20, 12 months full time	700.00
	484-A Medical Aspects of Compensation	October 22-27, full time	25.00
Institute of Industrial Health, College of Medicine, University of Cincinnati, Eden and Bethesda, Cincinnati 19, Ohio	Fellowship in Industrial Medicine	July 1, 36 months, full time	Stipend
	INTERNAL MEDICINE		
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Differential Diagnosis and Treatment of Internal Diseases	January 8-March 25, part time	50.00
University of Southern California, University Park, Los Angeles 7, Calif. At: Los Angeles County Hospital	Internal Medicine 880	September 17, 12 months, full time	1,000.00
The Surgeon General's Office, Dept of the Army, Washington 25, D. C. At: Letterman Army Hospital, San Francisco, Calif.	Recent Advances in Internal Medicine [11,14b]	November 5-9, full time	None
At: Walter Reed Army Hospital, Army Medical Center, Washington 12, D. C.	Present Trends in Internal Medicine [11,14b]	October 8-12, full time	None
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	2 Week Intensive Course in Internal Medicine	October 1, full time	75.00
University of Kansas Medical Center, Kansas City, Kan.[24]	Internal Medicine	December 10-12, full time	20.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass. At: Boston City Hospital	Internal Medicine 1	September 4-August 31, full time	600.00 [16]
	Internal Medicine 2	September 4-November 30, full time	375.00 [16]
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11, Mass.	Review of Recent Advances in Internal Medicine	September 24-29, 1 week, full time	50.00

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Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
INTERNAL MEDICINE—Continued			
University of Michigan Medical School, Dept. of Postgraduate Medicine, Ann Arbor, Mich. At: University Hospital	Clinical Internal Medicine	October to April, part time	$ 65.00
Wayne University College of Medicine, 1512 St. Antoine St., Detroit 26, Mich. At: Receiving Hospital	Medical Conference Medical Seminar	Quarterly, 12 weeks, part time Quarterly, 12 weeks, part time	15.00 15.00
Essex County Medical Society, 38-40 Clinton St., Newark, N. J. At: Seton Hall Campus, South Orange, N. J.	Internal Medicine	Weekly, 22 sessions, part time	125.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Medicine PM 30, Symposium on Internal Medicine Medicine PM 43, Peripheral Vascular Disorders	October 15-December 15, full time October 11-January 17, part time	350.00 40.00
At: Montefiore Hospital	Medicine PM 65, Peripheral Vascular Disorders	September 27-March 27, part time	125.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: Jewish Sanitarium and Hospital for Chronic Disease	Internal Medicine	October, 8 weeks, part time	40.00
At: Kings County Hospital	Recent Advances in Internal Medicine	October, 12 sessions, part time	30.00
New York Medical College, Flower and Fifth Ave. Hospitals, 29 E. 106th St., New York 29, N. Y.	Internal Medicine	Monthly, except July and August, 1 or 2 months, full time	150.00 1 month 300.00 2 months
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	The Treatment of Varicose Veins	Arranged, 4 weeks, part time	50.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: Bellevue, Willard Parker and University Hospitals	5429-A Internal Medicine	September 24-September 20, 12 months, full time	700.00
At: Beth Israel Hospital	733-A Internal Medicine	October 24-December 14, 8 weeks, part time	80.00
Cornell University Medical College, 1300 York Ave., New York 21, N. Y. At: Bellevue Hospital, Second (Cornell) Medical Division	Internal Medicine	Continuously, 1st of each month, 3-6 months, full time	500.00 6 mos. 250.00 3 mos.
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Internal Medicine	October to May, full time	800.00
American College of Physicians, 4200 Pine St., Philadelphia 4, Pa. At: University of Cincinnati School of Medicine	Internal Medicine with Emphasis on Pathological Physiology	September 17-21, full time	30.00 A.C.P. Mbrs. 60.00 non-members
American College of Physicians, 4200 Pine St., Philadelphia 4, Pa. At: University of Pennsylvania Graduate School of Medicine	Physiological Basis for Internal Medicine	December 10-15, full time	30.00 A.C.P. Mbrs. 60.00 non-mbrs.
At: Marquette University School of Medicine, Milwaukee	Internal Medicine	October 8-13, full time	30.00 A.C.P. Mbrs. 60.00 non-members
MALIGNANT DISEASE			
Stanford University School of Medicine, 2398 Sacramento St., San Francisco, Calif.[49] At: Stanford Hospital	Diagnosis and Treatment of Tumors	September 10-14, part time	75.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Montefiore Hospital	Medicine PM 72, Neoplastic Diseases	September 18-January 29, part time	150.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: Brooklyn Cancer Institute	Newer Concepts in Diagnosis and Treatment of Neoplastic Disease	October, 8 weeks, part time	30.00
New York Medical College, Flower and Fifth Ave. Hospitals, 29 E. 106th St., New York 29, N. Y.	Newer Concepts in the Physiology and Biochemistry of Cancer	Arranged, 6 weeks, part time	150.00
University of Oregon Medical School, 3181 S. W. Sam Jackson Park Road, Portland 1, Ore.	Malignant Diseases	September 24-28, 5 days, full time	30.00
MEDICINE, GENERAL			
Medical College of Alabama, Birmingham, Ala.	American Academy of General Practice Postgraduate Seminar	August, 2 days	None
University of Arkansas School of Medicine, Little Rock, Ark.	Medicine, Pediatrics, Obstetrics and Gynecology, Surgery	October-June, every 2 weeks	Not given
California Academy of General Practice, 450 Mission St., San Francisco, Calif. At: Hotel del Coronado, Coronado, Calif.	1951 Scientific Assembly	November 5-7, full time	5.00 non-academy members
California Medical Association, 1036 N. Center, Stockton, Calif. At: Fresno, Calif. At: Santa Barbara At: Riverside	Medical and Surgical Institute Medical and Surgical Institute Medical and Surgical Institute	October, 2 days November, 2 days January, 2 days	5.00 [1] ....
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Diseases of the Kidneys	November 13-December 18, part time	25.00
Los Angeles County Medical Association, 1925 Wilshire Blvd., Los Angeles 5, Calif. At: San Fernando Branch and East Los Angeles Branch	General Medicine Practical Medicine Lecture Series	October 2-December 18, part time Continuously, twice weekly	50.00 None
St. John's Hospital, Santa Monica, Calif.	Annual Postgraduate Assembly	September 10-12, full time	10.00
Stanford University School of Medicine, 2398 Sacramento St., San Francisco, Calif. At: San Francisco Hospital At: Stanford Hospital	General Medicine General Medicine	September 10-14, part time September 10-14, part time	75.00 75.00
University of California Medical Extension, Medical Center, San Francisco 22, Calif. At: U-California Hospital	Evening Lectures in Medicine	September-December, 15 sessions	Not given
University of Southern California, University Park, Los Angeles 7, Calif. At: Los Angeles County Hospital	Electrodiagnosis and Electromyography 2880	Arranged, 1 month, full time	100.00

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Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
MEDICINE, GENERAL—Continued			
San Diego County General Hospital, North End of Front St., San Diego 3, Calif.	Postgraduate Assembly	September, 3 days, part time	None
Atlanta Graduate Medical Assembly, 768 Juniper St., N. E., Atlanta, Ga. At: Municipal Auditorium	Graduate Medical Assembly	January or February, 3 days	$ 15.00
Emory University School of Medicine, 36 Butler St., S. E., Atlanta, Ga. At: Grady Memorial Hospital	PG Course for General Practitioners	October 8-12, 5 days, full time	10.00
	Intensive Personal Course in Liver and Biliary Tract Diseases	September 17, 1 week, full time	100.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Biochemical Background of Clinical Medicine—A Basic Course	October 3, 10 sessions, part time	100.00
	Physical Diagnosis	September 26, 10 sessions, part time	80.00
	Personal Course in Medical Emergencies, Diagnosis and Treatment	September 26, 10 sessions, part time	80.00
Illinois Academy of General Practice, 12710 Maple Ave., Blue Island, Ill. At: Throughout Illinois	Postgraduate Course	35 weeks, 1 day per week	Not given
Illinois State Medical Society, Postgraduate Education Committee, 30 N. Michigan Ave., Chicago 2, Ill. At: Various centers throughout Illinois	Postgraduate Conference	Varied	None
Indiana State Medical Association, 23 E. Ohio St., Indianapolis, Ind. At: University of Indiana to 92 County Societies by direct telephone wire	Postgraduate Medicine	Continuously	None
University of Kansas Medical Center, Kansas City, Kan.[24]	Medical Technology	January 14-16, full time	10.00
Boston University School of Medicine, 80 East Concord St., Boston, Mass. At: Massachusetts Memorial Hospital	PG Course in General Medicine	October-April, part time	100.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass. At: Boston City Hospital	Medical Diagnosis and Treatment	October 3-May 28, 35 sessions, part time	100.00[16]
University of Michigan Medical School, Dept. of Postgraduate Medicine, Ann Arbor, Mich. At: University Hospital	Diagnostic Methods, Clinical and Laboratory Interpretation	October 23-26, full time	30.00
Michigan State Medical Society, 2020 Olds Tower, Lansing, Mich.[32] At: Alpena, Battle Creek, Bay City, Jackson, Lansing, Midland, Mt. Clemens, Muskegon, Traverse City, Escanaba, Houghton, Iron Mountain, Ironwood, Marquette, Menominee, Sault Ste. Marie	Extramural Courses	Fall, 1 day in each center	None
University of Minnesota, Center for Continuation Study, Minneapolis 14, Minn.	ACTH and Cortisone for General Physicians	October 17, 1 day, full time	10.00
Mississippi Chapter American Academy of General Practice, Canton, Miss. At: Jackson, Miss.	American Academy of General Practice	December, 1 day	None
Kansas City Southwest Clinical Society, 630 Shukert Bldg., Kansas City 6, Mo. At: Municipal Auditorium	Fall Clinical Conference	October 1-4, 4 days	20.00
Missouri State Medical Association, 634 N. Grand Ave., St. Louis, Mo. At: 7 Councilor Districts	District Meeting	Fall, 1 day in each district	Not given
Omaha Mid-West Clinical Society, 1031 Medical Arts Bldg., Omaha 2, Neb. At: Hotel Paxton	Annual PG Clinical Assembly	October 29-November 2 October 27-31, 5 days	Not given
New Hampshire Academy of General Practice, Lyme, N. H. At: Various hospitals throughout N. H.	General Practice Seminars	Varies—once a month	None
Atlantic City Hospital, Atlantic City, N. J.	Recent Advances in General Practice	Continuously, except 2 weeks in August	None
University of Buffalo, School of Medicine, 24 High St., Buffalo, N. Y.	Postgraduate Medicine for General Practitioners	September 17-22, full time	35.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Medicine PM 49, Diagnosis and Treatment of Ambulatory Patients	October 17-December 21, part time	30.00
	Medicine PM 32, Gastrointestinal Disease	October 17-December 12, part time	80.00
	Medicine PM 33, Diseases of the Liver	October 15-29, part time	35.00
	Medicine PM 34, Diseases of the Kidneys	November 5-19, part time	35.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: Beth El Hospital	Peripheral Vascular Diseases I	October, 10 sessions, part time	30.00
At: Jewish Hospital	Peripheral Vascular Diseases II	October, 5 weeks, part time	20.00
	Hypertension and Nephritis	October, 8 sessions, part time	20.00
At: Coney Island Hospital	Peripheral Vascular Diseases III	October, 8 sessions, part time	20.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Peripheral Vascular Disease	Arranged, 2 months, fall, part time	200.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	General Practitioner's Course	Arranged, 4 weeks, full time	100.00
	General Medicine	Arranged, 4 weeks, full time	100.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.	5431-A ACTH and Cortisone	To be announced, 4 days, full time	75.00
	5418-A Peripheral Vascular Diseases	November 26-30, full time	75.00
At: University Hospital	5424-A Nephritis and Hypertension	July 16-20, full time	60.00
	5424-B Nephritis and Hypertension	October 29-November 2, full time	60.00
At: Bellevue and University Hospitals	5430-B General Review Course for General Practitioners	July 16-27, full time	100.00
	General Practitioners	October 22-November 2, full time	100.00
Duke University School of Medicine, Durham, N. C. At: Duke Hospital	Medical Postgraduate Course	June 18-21, 4 days, full time	25.00
University of North Carolina School of Medicine, Chapel Hill, N. C.	Medical PG Extension Course	October and November, 6 to 8 weeks, part time	20.00 to 30.00
Southwestern Society of General Physicians, Madeira, Ohio At: Hotel Gibson, Cincinnati	Infectious Diseases of Respiratory Tract	December 9, 1 day	10.00
	Acute Contagious Disease	October 18-November 29, 8 sessions	15.00
At: University of Cincinnati	Seminars	October to January, 8 sessions, part time	10.00 to 15.00

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Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
MEDICINE, GENERAL—Continued			
Medical Society of the State of Pennsylvania, 230 State St., Harrisburg, Pa.			
At: 10 centers in state	Graduate Education Institute	Fall, 1951	$ 25.00 [7]
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	The Hand	July 9-20, full time	200.00
Medical College of South Carolina, 16 Lucas St., Charleston, S. C.	Postgraduate Seminar	October 30-November 1, full time	Not given
Nashville Academy of Medicine, Doctors Bldg., Nashville, Tenn.			
At: Maxwell House, Nashville, Tenn.	Postgraduate Assembly	October, 2½ days	15.00
Postgraduate Medical Assembly of South Texas, 229 Medical Arts Bldg., Houston, Tex.			
At: Shamrock Hotel	17th Annual Meeting	July 23-25, 3 days	20.00
University of Texas Postgraduate School of Medicine, 207 A Hermann Professional Bldg., Houston, Texas			
At: Shannon West Texas Memorial Hospital	Application of Newer Concepts in the Management of Common Rheumatic Diseases	September 26, 15 sessions	15.00
University of Washington School of Medicine, Seattle 5, Wash.[23]	Diagnosis and Treatment of Infectious Diseases	October 1-3, full time	30.00
Jackson Clinic, 16 South Henry St., Madison, Wis.			
At: Methodist Hospital	Postgraduate Meeting	September 29, 1 day, part time	None
NEUROLOGY AND PSYCHIATRY			
Los Angeles Psychoanalytic Society, 407 Commercial Center St., Beverly Hills, Calif.[24]	Professional School Courses	July-January, 6 months, part time	232.00
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Neurology	September 20-November 8, part time	40.00
Stanford University School of Medicine, 2398 Sacramento St., San Francisco, Calif.			
At: Stanford Hospital	Psychiatry for General Practitioners	September 10-14, part time	75.00
University of California Medical Extension, Medical Center, San Francisco, Calif.			
At: Langley Porter Clinic	Psychiatry and Neurology [2]	August-November, full time	200.00
University of Colorado Medical Center, Dept. of Psychiatry, 420 East Ninth Ave., Denver, Colo.			
At: Colorado Psychopathic Hospital	General Psychiatry and Psychomatic Medicine	July 26-28, full time	20.00
The Surgeon General's Office, Dept. of the Army, Washington 25, D. C.			
At: Fitzsimons Army Hospital, Denver, Colo.	Psychotherapeutic Medicine	August 27-September 8, full time	None [12,14a]
At: Letterman Army Hospital, San Francisco, Calif.	Psychotherapeutic Medicine	August 27-September 8, full time	None [12,14a]
At: Walter Reed Army Hospital, Army Medical Center, Washington 12, D. C.	Psychotherapeutic Medicine	September 3-15, full time	None [12,14a]
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Personal Course in Clinical Neurology	September 26, 10 sessions, part time	80.00
	Personal Course in Neuropathology	By appointment	20.00 per hour
Institute for Psychoanalysis, 664 N. Michigan Ave., Chicago, Ill.			
At: Illinois Neuropsychiatric Institute	Psychosomatic Demonstrations	October-June, part time	None
At: Cook County Hospital	Psychopathological Demonstrations	October-June, part time	None
University of Kansas Medical Center, Kansas City, Kan.[25]			
At: Winter General Veterans Hospital, Topeka	Psychomatic Medicine	October 22-24, full time	20.00
Massachusetts Department of Medical Health, 15 Ashburton Place, Boston 8, Mass.			
At: Metropolitan State Hospital, Waltham, Mass.	PG Seminar in Neurology and Psychiatry—Review Course in Basic Neurology and Psychiatry	October 5-December 7, part time	None
At: Boston Psychopathic Hospital, Boston, Mass.	Clinical Psychology and Dynamic Psychiatry	October 17-December 12, part time	None
At: Walter E. Fernald State School, Waverly, Mass.	Child Psychiatry	October 10-December 10, part time	None
University of Minnesota, Center for Continuation Study, Minneapolis 14, Minn.	Child Psychiatry for General Physicians	November 26-December 1, full time	35.00
Columbia University, 630 W. 168th St., New York, N. Y.			
At: Columbia-Presbyterian Medical Center	Psychiatry PM 1, Symposium on Neurology and Psychiatry	October 1-December 7, full time	250.00
At: Montefiore Hospital	Neurology PM 60, Neuropsychiatry	November 5-Dec. 1, full time	150.00
	Neurology PM 61, Advanced Neurology	July 2-September 28, October 8-January 4, full time	150.00
At: Mt. Sinai Hospital	Neurology PM 31, Practical Neuroanatomy and Neuropathology	October 8-May 12, part time	140.00
	Neurology PM 32, Advanced Practical Neuroanatomy and Neuropathology	October 4-May 22, part time	100.00
	Neurology PM 34, Laboratory Training in Clinical Electroencephalography	Any 3 months, full time	150.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23]			
At: Jewish Sanitarium and Hospital for Chronic Diseases	Clinical Neurology	October, 8 sessions, part time	20.00
At: Jewish Hospital	Child Psychiatry	October, 10 sessions, part time	20.00
New York Medical College, Flower and Fifth Ave. Hospitals, 30 E. 100th St., New York 29, N. Y.	Introduction to Psychanalysis	Fall, 12 sessions	30.00
	Seminar on Psychomatic Medicine	Fall, 6 sessions	40.00
	Introductory Lectures in Child Psychiatry	Fall, 10 sessions	30.00
	Readings in Psychoanalytic Literature	Fall, 15 sessions	40.00
	Comprehensive Course in Psychoanalysis	Fall, 3 years	300.00 [21]
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.	643-A Treatment Methods in Psychiatry	January 14-March 8, part time	300.00
At: Bellevue Hospital	644-A Neuroanatomy and Neurophysiology	January 3-March 22, part time	200.00
	645-A Neurology	September 4, 9 months, full time	700.00
	646-A Psychiatry in the Practice of Medicine and Pediatrics	Arranged, 3 months, full time	300.00
	647-A Psychiatry and Neurology	January 7-March 15, full time	300.00
	648-A Psychology and Psychodynamics	September 17-December 15, part time	250.00
	649-A Psychiatry	September 24-June 14, full time	700.00

References will be found on page 599.

Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
NEUROLOGY AND PSYCHIATRY—Continued			
American Institute for Psychoanalysis, 220 W. 98th St., New York 25, N. Y.	The Meaning of Dreams [35]	September 10, 15 sessions, part time	$ 45.00
	Clinical Conferences [35]	September 14, 10 sessions, part time	30.00
	Continuous Case Seminar [35]	November 23, 10 sessions, part time	30.00
	Horney's Theory of Neurosis	September 13, 15 sessions, part time	30.00
	Readings in Psychoanalysis, The Works of Horney	November 23, 25 sessions, part time	50.00
	Psychiatry and Psychoanalysis	September 13, 15 sessions, part time	30.00
	Readings in Psychoanalysis, The Works of Freud	September 10, 20 sessions, part time	40.00
	Moral Alternatives in Our Times	October 2, 15 sessions, part time	17.50
	Psychoanalytic Study of Case Histories	September 27, 15 sessions, part time	30.00
American College of Physicians, 4200 Pine St., Philadelphia 4, Pa. At: Jefferson Medical College of Philadelphia	Clinical Neurology	October 29-November 3, full time	30.00 A.C.P. Mbrs. 60.00 non-mbrs.
Philadelphia Psychoanalytic Institute, 1701 Walnut St., Philadelphia, Pa.	Professional Training in Psychoanalysis [36]	Continuous, September to June	250.00 per year
	Psychosomatic Medicine	September-February, 12 sessions	Arranged
	Psychoanalytic Criminology	September-December, 6 sessions	Arranged
	Educative Analysis	September-June, continuous	Arranged
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Neurology-psychiatry	October to May, full time	800.00
University of Washington School of Medicine, Seattle 5, Wash.[48]	Practical Psychiatry	July 23-27, full time	50.00
	Neurology	August 3-4, full time	20.00
NUCLEAR SCIENCE			
Northwestern University Medical School, 303 E. Chicago Ave., Chicago, Ill.	Radiation Physics (Radiology D12)	Winter and spring, quarters—4 months, part time	25.00
Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn.	Radioisotope Techniques	July 9 and August 13, 4 weeks, full time	25.00
NUTRITION			
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Nutrition	Arranged, 1 month, part time	150.00
OBSTETRICS AND GYNECOLOGY			
Stanford University School of Medicine, 2398 Sacramento St., San Francisco, Calif. At: Stanford Hospital	Obstetrics and Gynecology	September 10-14, part time	75.00
University of California, Extension Division Bldg., 540 Powell St., San Francisco 2, Calif.	Gynecological and Obstetrical Conference	August 29-31, 3 days	Not given
University of Colorado Medical School, 4200 E. Ninth Ave., Denver, Colo.	1 Week Individual Instruction in Obstetrics and Gynecology	Arranged throughout the year, 1 week	35.00
	Lecture Refresher Course, Obstetrics and Gynecology	October, 2 days	25.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Personal Course in Vaginal Approach to Pelvic Surgery	September 17, Nov. 5, 1 week, full time	100.00
	Intensive 2 Week Course in Gynecology	September 24, October 22, full time	150.00
	Personal Course in Office Gynecology	September 5, November 7 and January 9, 4 sessions, part time	80.00
	Personal Course in Gynecologic Surgery	September 6, November 7 and January 10, 4 sessions, part time	80.00
	Intensive 2 Week Course in Obstetrics	September 10, November 5, full time	150.00
	Personal Course in Surgical Obstetrics	September 5, November 7, and January 9, 4 sessions, part time	100.00
	Personal Course in General and Office Obstetrics	July 11, October 3, 4 sessions, part time	80.00
Michael Reese Hospital Postgraduate Medical School, 29th St. and Ellis Ave., Chicago 16, Ill.	Gynecology and Surgery for the General Practitioner	October 3-March 28, 25 sessions, part time	150.00
Chicago Medical Society, 30 N. Michigan Ave., Chicago 2, Ill. At: Thorne Hall	Obstetrics and Gynecology	October 22-26, 5 days	60.00
Stritch School of Medicine of Loyola University, 706 S. Wolcott Ave., Chicago, Ill. At: Lewis Memorial Maternity Hospital	Third Annual Televised Postgraduate Conference in Obstetrics and Gynecology	September 24-28, 1951	Not given
State University of Iowa College of Medicine, Iowa City, Iowa	Postgraduate Conference in Obstetrics and Gynecology	October and December, 1 day	5.00
University of Kansas Medical Center, Kansas City, Kan.[24]	Obstetrics and Gynecology	November 12-14, full time	20.00
University of Maryland School of Medicine, Lombard and Greene Sts., Baltimore 1, Md. At: University Hospital	Gynecology, Oncology and Female Urology	September-May, 10 weeks, full time	125.00
	Gynecology and Obstetrics	September-May, 12 weeks, full time	150.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass. At: Boston Lying-in Hospital	Clinical Obstetrics	September and October, 1 month, full time	150.00 [16] a month
At: Massachusetts General Hospital	Gynecology 1	July 1-June 30, throughout the year, by arrangement, full time [18]	800.00 [16]
	Gynecology 3	October 8-20, full time	150.00 [16]
At: Free Hospital for Women	Gynecology 2	July, August and September 1951, 1 month, full time	150.00 [16] per month
University of Minnesota, Center for Continuation Study, Minneapolis 14, Minn.	Obstetrics for General Physicians	January 3-5, full time	20.00
Essex County Medical Society, 38-40 Clinton St., Newark, N. J. At: Seton Hall Campus, South Orange, N. J.	Gynecology	Arranged, 15 sessions, part time	100.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Gynecology PM 30, Recent Advances in Gynecology	December 17-22, full time	65.00
At: Margaret Hague Maternity Hospital	Obstetrics PM 80, Internship Training	1st of each month, 3 months, full time	350.00
	Obstetrics PM 81, Observation Course	1st of each month, 1 month, full time	100.00

References will be found on page 599.

Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
OBSTETRICS AND GYNECOLOGY—Continued			
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[33]			
At: Greenpoint Hospital	Sterility	October, 12 sessions, part time	$ 40.00
At: State University College of Medicine at N. Y. C.	Manikin	October, 8 weeks, part time	30.00
At: St. John's Episcopal Hospital	Office Gnyecology	October, 8 sessions, part time	20.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Obstetrics and Gynecology Including Manikin Obstetrics and Operative Gynecology (Cadaver)	October, 2 months, full time	250.00
	Manikin Obstetrics	Arranged, 4 weeks, part time	150.00
	Clinical Course in Office and General Obstetrics	Arranged, 4 weeks, part time	100.00
	Clinical Gynecology	Arranged, 6 weeks, part time	75.00
	Clinical and Operative (Cadaver) Gynecology	Arranged, 6 weeks, part time	175.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.			
At: Bellevue and University Hospitals	560-A Gynecological Malignancy [30]	October 15-26, full time	200.00
At: University Hospital	561-A Seminar in Gynecology	October 8-December 1, full time	300.00
	562-A Gynecology Diagnosis and Office Treatment	October 29-November 19, part time	50.00
	563-A Gynecology, Diagnosis and Office Treatment	September 17-October 22, part time	75.00
	564-A Infertility	December 10-12, full time	40.00
	566-A Cystoscopy and Endoscopy	September 17-October 22, part time	100.00
	567-A Gynecological Endocrinology	October 9-December 8, part time	150.00
	568-A Vaginal Cytology (For Specialists)	October 9-December 6, part time	100.00
	569-A Surgical Anatomy as Applied to Gynecology (Cadaver) (For Specialists)	October 16-November 13, part time	200.00
At: Beth Israel Hospital	734-A Gynecology (For Specialists)	September 4-December 21, part time	250.00
Southern Pediatric Seminar, Saluda, N. C.	Obstetrical and Gynecological Session	July 30-August 4, 1 week	25.00
Southwestern Society of General Physicians, Madeira, Ohio			
At: Hotel Gibson, Cincinnati	Problems in Obstetrics	September 20, 1 day	10.00
	Office Gynecology	January 9, 1 day	10.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Gynecology-Obstetrics	October to May, full time	800.00
University of Texas Postgraduate School of Medicine, 207 A Hermann Professional Bldg., Houston, Texas			
At: St. Joseph's Infirmary	Obstetrics (2d part)	September 12, 15 sessions	25.00 (Both parts)
University of Washington School of Medicine, Seattle 5, Wash.[39]	Obstetrics	August 6-10, full time	50.00
OPHTHALMOLOGY AND OTOLARYNGOLOGY			
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Ophthalmology	January 29-March 18, 8 weeks, part time	30.00
	Otolaryngology	October 30-December 18, 8 weeks, part time	30.00
University of California Medical Center, San Francisco, Calif.	Ophthalmology	September 10-14, 1 week, full time	Not given
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	2 Week Clinical Course in Otolaryngology	1st of every week, full time	50.00
	2 Week Clinical Course in Ophthalmology	1st of every week, full time	50.00
University of Illinois College of Medicine, 1853 W. Polk St., Chicago 12, Ill.	Postgraduate Course in Ophthalmology	July 1-January 1, 1952, 6 months, full time	500.00
Northwestern University Medical School, 303 E. Chicago Ave., Chicago 11, Ill.	Endaural Otologic Surgery and Audiology	October, 5 weeks, full time	500.00
	Postgraduate Basic Course in Ophthalmology	October-June, 8 months, full time	800.00
State University of Iowa College of Medicine, Iowa City, Iowa	Postgraduate Conference in EENT	November, 1½ weeks, full time	Not given
Tulane University School of Medicine, 1430 Tulane Ave., New Orleans, La.	Slit Lamp and Gonioscopy	November 26-December 1 and December 3-8	100.00
	Basic Science in Ophthalmology	July 9-June 30	500.00
American Academy of Ophthalmology and Otolaryngology, 100 First Ave., Bldg., Rochester, Minn.			
At: Palmer House, Chicago, Ill.	Instruction Courses	October 14-19, 1 week	1.50 per hour
Home Study Courses	Ophthalmology	September-June, 10 months, part time	10.00 each course
	Otolaryngology		
Ophthalmological Study Council, 243 Charles St., Boston, Mass.			
At: Harvard Medical School	PG Courses in Ophthalmology	September 29-March 1	750.00
At: Portland, Me.	Lancaster Courses in Ophthalmology	June-September, 11 weeks, full time	300.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass.	Anatomy of the Head and Neck	December 3-February 2, full time	300.00 [16]
At: Harvard and Massachusetts Eye and Ear Infirmary	Basic Sciences in Ophthalmology, Clinical Opthalmology and Ocular Pathology, Fundamentals in Refraction and Ocular Motility	September 24-March 1, full time	700.00 [16]
	Histopathology of the Ear, Nose and Throat	November 5-December 1, full time	200.00 [16]
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11, Mass.[37]	Ophthalmology	October 15-November 9, part time	75.00
	Neuroophthalmology	November 26-30, full time	75.00
	Ophthalmoscopy	November 26-December 21, part time	50.00
	Ophthalmology	January 7-February 1, part time	75.00
Wayne University College of Medicine, 1512 St. Antoine St., Detroit 26, Mich.			
At: Kresge Eye Institute, Detroit, Mich.	Basic Ophthalmology	September, 9 months, full time	900.00
Essex County Medical Society, 38-40 Clinton St., Newark, N. J.			
At: Newark Eye and Ear Infirmary, Newark	Ocular Therapy	Arranged, 5 sessions, part time	50.00
At: Seton Hall Campus, South Orange	Ocular Pathology	Arranged, 10 sessions, part time	100.00
Columbia University, 630 W. 168th St., New York, N. Y.			
At: Columbia-Presbyterian Medical Center	Otolaryngology PM 1, Bronchoscopy	October 8-26, part time	250.00
At: Montefiore Hospital	Ophthalmology PM 62, Glaucoma	October 15-December 10, part time	30.00

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Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
OPHTHALMOLOGY AND OTOLARYNGOLOGY—Continued			
At: Mt. Sinai Hospital	Ophthalmology PM 30, Slit Lamp Microscopy of the Living Eye	October 24-December 12, part time	$ 40.00
	Otorhinology PM 30, Rhinoplasty and Otoplasty	Any 3 months, full time	250.00
	Ophthalmology PM 31, Ophthalmic Surgery	September 26-December 19, part time	90.00
	Ophthalmology PM 32, Refraction and Extraocular Muscles	October 5-December 28, part time	80.00
	Ophthalmology PM 33, Glaucoma and the Pharmacology of the Autonomic Nervous System	September 27-November 15, part time	20.00
	Ophthalmology PM 34, Histopathology of the Eye	October 8-December 20, part time	55.00
	Ophthalmology PM 35, Bacteriology of the Eye and External Diseases	October 8-December 24, part time	45.00
	Ophthalmology PM 36, Embryology of the Eye	October 24-December 12, part time	40.00
	Ophthalmology PM 37, Physiological Optics	October 8-December 17, part time	45.00
	Ophthalmology PM 38, Ophthalmoscopy Advanced	October 24-December 12, part time	40.00
	Ophthalmology PM 40, Techniques of Systematic Examination of the Eye and Functional Testing	September 19-December 19, part time	25.00
	Otolaryngology PM 30, Practical Pathology of the Ear	October 9-November 16, part time	50.00
	Ophthalmology PM 39B, Ophthalmoscopy in General Practice	September 27-December 27, part time	25.00
At: Columbia-Presbyterian Medical Center	Ophthalmology PM 42, Medical Ophthalmology	September 11-December 18, part time	25.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23]	Otolaryngology PM 10, Advanced Otolaryngology	Any 3 consecutive months, full time	150.00
At: Jewish Sanitarium and Hospital for Chronic Diseases	Ophthalmoscopy	October, 8 sessions, part time	20.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Operative Ophthalmology (Cadaver)	Arranged, 4 weeks, part time	100.00
	Otolaryngology and Ophthalmology	October 1, 9 months, full time	1,000.00
	Otolaryngology and Ophthalmology Including Cadaver EENT and Refraction	October and January, 3 months, full time	600.00
	Refraction	Arranged, 4 weeks, part time	100.00
	Advanced Otology [30]	Arranged, 2 weeks, part time	250.00
	Ophthalmology, Including Cadaver Ophthalmology and Refraction	Arranged, 3 months, part time	300.00
	Motor Anomalies	Arranged, 4 weeks, part time	50.00
	Operative Otology (Cadaver)	Arranged, 4 weeks, part time	100.00
	Operative Nose and Throat (Cadaver)	Arranged, 4 weeks, part time	150.00
	Seminar in Ophthalmology and Otolaryngology	Arranged, 5 days, full time	50.00
	Clinical Ophthalmology	Arranged, 6 weeks or 3 months, part time	75.00 6 wks. 100.00 3 mos.
	Clinical Otolaryngology	Arranged, 6 weeks or 3 months, part time	100.00 6 wks. 150.00 3 mos.
	Clinical Ophthalmology and Otolaryngology	Arranged, 6 weeks or 3 months, full time	150.00 6 wks. 250.00 3 mos.
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.	576-A Ophthalmology	October 1-June 14, full time	700.00
	5712-A Practical Office Procedures	July 16-20, part time	50.00
	5713-A Ocular Therapeutics	July 23-27, part time	50.00
	5713-B Ocular Therapeutics	January 14-18, part time	50.00
	5714-A Histopathology	July 23-27, part time	100.00
	5714-B Histopathology	January 14-18, part time	100.00
	591-A Intensive Course in Basic Sciences	September 10-21, part time	75.00
	592-A Histopathology of the Ear, Nose and Throat	September 10-21, part time	75.00
	593-A Basic Sciences of Otorhinolaryngology	September 24-June 13, full time	700.00
	596-A Anatomy of Head, Neck and Thorax for Otolaryngologists	September 24-November 2, part time	150.00
At: University Hospital	575-A Differential Diagnosis with the Slit Lamp (for Specialists)	November 5-9, part time	75.00
At: Bellevue and University Hospitals	573-A Ophthalmic Neurology (for Specialists)	November 12-16, part time	50.00
	574-A Surgery of the Eye (for Specialists)	October 29-November 3, full time November 5-9, part time	100.00 75.00
	577-A External Diseases of the Eye (for Specialists)		
	578-A Ocular Expressions of Systemic Disease [30]	November 12-16, part time	50.00
	579-A Neuro-Ophthalmology	July 9-13, part time	50.00
	5710-A Perimetry	July 9-13, part time	50.00
	5711-A Ophthalmoscopy	July 16-20, part time	50.00
	5713-B Ocular Therapeutics	January 14-18, part time	50.00
	5714-B Histopathology [30]	January 14-18, part time	100.00
	594-A Endaural Surgery [30]	November 5-16, full time	200.00
	597-A Neuro-Anatomy, Neuro-Physiology and Neuro-Otology [30]	November 12-December 21, part time	75.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Otolaryngology	October to May, full time	800.00
	Ophthalmology	October to May, full time	800.00
University of Texas Postgraduate School of Medicine, 207 A Hermann Professional Bldg., Houston, Texas At: M. D. Anderson Hospital for Cancer Research	Common Diseases of the Eyes, Ears, Nose and Throat	September 27, 10 sessions, part time	10.00
At: Shannon West Texas Memorial Hospital	Common Diseases of the Eyes, Ears, Nose and Throat	September 27, 10 sessions, part time	10.00
Virginia Society of Ophthalmology and Otolaryngology, Charlottesville, Va. At: Richmond, Va.	Postgraduate Course in Ophthalmology and Otolaryngology	November 27-30, full time	25.00 to 35.00

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Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
ORTHOPEDIC SURGERY			
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Diseases of Injuries of Bones and Joints	July 9-30, full time	$100.00
Northwestern University Medical School, 303 E. Chicago Ave., Chicago 11, Ill.	Basic Science Course in Orthopaedics	January-June, full time	600.00
Tulane University of Louisiana School of Medicine, 1430 Tulane Ave., New Orleans, La.	Basic Science as Applied to Orthopedics	September 1, 5 months	300.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass.			
At: Children's Hospital	Orthopedic Surgery 1	July 1-June 30, throughout the year, by arrangement, full time [17]	800.00 [16] for 12 months
At: Massachusetts General Hospital	Orthopedic Surgery 2	July 1-June 30, throughout the year, by arrangement, full time [18]	800.00 [16] for 12 months
At: Children's and Massachusetts General Hospitals	Orthopedic Surgery 3	July 1-June 30, throughout the year, by arrangement, full time [17]	800.00 [16] for 12 months
Columbia University, 630 W. 168th St., New York, N. Y.			
At: Hospital for Joint Diseases	Orthopedic Surgery PM 80, Survey of the Essentials of Orthopedics	September 27-December 13, part time	100.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Orthopedics in General Practice	November, 1 week, full time	60.00
	Orthopedics of the Foot	Arranged, 8 sessions	100.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York, N. Y.	Orthopedic Surgery for General Surgeons	Arranged, 3 months, part time	75.00
	Operative Orthopedics (Cadaver)	Arranged, 5 periods, part time	100.00
	Advanced Orthopedics of the Foot	Arranged, 8 periods, part time	100.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.			
At: Bellevue and University Hospitals	581-A Basic Sciences in Relation to Orthopedic Surgery	January 2-June 28, full time	450.00
	582-A Orthopedics in General Practice	October 15-26, full time	100.00
	583-A Anatomy for Orthopedic Surgeons	January 7-12, full time	75.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Orthopedics	October to May, full time	800.00
PATHOLOGY			
The Surgeon General's Office, Dept. of the Army, Washington 25, D. C.			
At: Armed Forces Institute of Pathology, 7th St. and Independence Ave., S. W., Washington 25, D. C.	Ionizing Radiation Injury	September 3-7, full time	None [13,14c]
	Thermal and Chemical Injuries of Tissue	September 24-28, full time	None [13,14c]
	Pathology of Diseases Peculiar to Aviation and Submarine Medicine	October 22-26, full time	None [13,14c]
	Medical Legal Aspects of Military Medicine	December 3-7, full time	None [13,14c]
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	12 Month Department Course in Gross and Surgical Pathology	By appointment, full time	900.00
	12 Month Course in Gross and Microscopic Pathology	By appointment, full time	500.00
	6 Month Clinical Course in Gross and Surgical Pathology	By appointment, full time	500.00
	Personal Course in Surgical Pathology on Selective Subjects	By appointment, 1 or 2 weeks, full time	15.00 per hour
	Personal Course in Surgical Pathology	By appointment, every month, 2 or 4 weeks, full time	150.00 2 wks. 250.00 4 wks.
	Personal Course in Pathology and Laboratory Medicine	September 12, 10 sessions, part time	100.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16, Ill.	Pathologic Diagnosis	September, 10 weeks, part time	50.00
University of Maryland School of Medicine, Lombard and Greene Sts., Baltimore 1, Md.	Neuropathology	Arranged, 6 months, full time	200.00 [3]
	Pathology	Arranged, 6 months, full time	150.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass.			
At: Free Hospital for Women	Pathology of Obstetrics and Gynecology	January 3-May 15, 20 sessions, part time	150.00 [16]
Wayne University College of Medicine, 1512 St. Antoine St., Detroit 26, Mich.	Histopathology of Ear, Nose and Throat	December, 12 weeks, part time	25.00
	Neuropathology	December, 12 weeks, part time	50.00
	Pathology of Parasitic Diseases	September, 12 weeks, part time	50.00
	Gynecologic Pathology	December, 12 weeks, part time	50.00
Essex County Medical Society, 38-40 Clinton St., Newark, N. J.			
At: Seton Hall Campus, South Orange, N. J.	Surgical Pathology	Arranged, 30 sessions, part time	200.00
	Gynecological Pathology	Arranged, 16 sessions, part time	100.00
Columbia University, 630 W. 168th St., New York, N. Y.			
At: Mt. Sinai Hospital	Pathology PM 30, General and Special Pathology	September 29-January 5, part time	60.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Pathology	Arranged, 16 weeks, part time	200.00
	Clinical Pathology	Arranged, 26 hours	100.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Surgical Pathology	Arranged, 3 months, part time	300.00
	Urological Pathology	Arranged, 3 months, part time	50.00
	Blood Transfusions	Arranged, 2 weeks, part time	100.00
	Pathology	Arranged, 3 months, part time	300.00
	Pathology	Arranged, 12 months, part time	1,000.00
	Pathology for Surgeons	Arranged, 1 month, part time	100.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.			
At: University and Bellevue Hospitals	598-A Pathology of the Head and Neck	November 19-December 14, part time	100.00
At: University Hospital	441-A Gynecological Pathology (For Specialists)	September 19-January 2, part time	100.00
	442-A Pathology	September 18-December 27, part time	200.00
At: Lenox Hill Hospital	736-A Pathology for Surgeons	October 29-December 10, part time	50.00
	737-A Histopathology for Gynecologists	October 30-December 11, part time	50.00
University of Oklahoma School of Medicine and University Hospitals, Oklahoma City, Okla.	Postgraduate Course in Surgical Pathology	October-December, 10 sessions, part time	50.00
University of Washington School of Medicine, Seattle 5, Wash.[33]	Review for Specialty Boards	Arranged, part time	None
	Oncology	Arranged, 12 months, full time	None [38]

References will be found on page 599.

Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	PEDIATRICS		
Stanford University School of Medicine, 2398 Sacramento St., San Francisco, Calif. At: Stanford Hospital	Pediatrics	September 10-14, part time	$ 75.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	2 Week Personal Course in Cerebral Palsy	July 30, 2 weeks, full time	150.00
	12 Month Department Course in Pediatrics	July 1, full time	750.00
	Informal Refresher Course in Clinical Pediatrics	Every week, 2 or 4 weeks, full time	60.00 2 wks. 100.00 4 wks.
	Personal Course in Pediatrics	September 26, 10 sessions, part time	80.00
Children's Memorial Hospital, 707 W. Fullerton Ave., Chicago 14, Ill.	Postgraduate Course in Pediatrics	October 1-27	100.00
State University of Iowa College of Medicine, Iowa City, Iowa	Pediatrics Postgraduate Conference	October, 2 days, full time	5.00 [6]
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass. At: Massachusetts General Hospital	Pediatrics 1	October 1-May 29, full time	800.00 [10]
At: Childrens Hospital	Pediatrics 2	September 4-December 21, full time	500.00 [10]
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11, Mass.	Pediatrics	October 22-November 3, full time	75.00
Essex County Medical Society, 38-40 Clinton St., Newark, N. J. At: Newark City Hospital	Pediatrics	Arranged, 20 sessions, part time	100.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Pediatrics PM 30, Clinical Pediatrics	October 11-December 20, part time	80.00
	Pediatrics PM 31, Allergy in Children	October 12-December 14, part time	40.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: Beth El Hospital	Clinical Pediatrics	October, 6½ weeks, part time	30.00
At: Kings County Hospital	Applied Immunologic Procedures in Children	October, 8 weeks, part time	20.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Clinical Pediatrics	Continuously, 1, 3, 6, 9 or 12 months, full time	150.00 [10]
	Pediatric Allergy Course I	October-March, part time	300.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Pediatrics	Arranged, 4 weeks, part time	75.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: University Hospital	611-A Clinical Pediatrics	October 15-December 21, part time	125.00
	612-A Clinical Pediatrics	October 8-November 2, full time	150.00
	614-A Review of Clinical Pediatrics	September 10-15, full time	60.00
	618-A Pediatric Cardiology	September 17-21, full time	75.00
At: Willard Parker Hospital	617-A Communicable Diseases	January 14-18, full time	60.00
At: Bellevue and University Hospitals	6110-A Pediatrics	September 24-September 20, 12 months, full time	700.00
Southern Pediatric Seminar, Saluda, N. C.	Southern Pediatric Seminar (Pediatrics and Obstetrics)	Pediatrics—July 16-28	40.00
		Obstetrics—July 30-August 4	25.00 50.00 for both
University of Oklahoma School of Medicine and University Hospitals, Oklahoma City, Okla.[39]	Postgraduate Course in General Pediatrics	September 24-26, full time	15.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Pediatrics	October to May, full time	800.00
	PHARMACOLOGY		
Wayne University College of Medicine, 1512 St. Antoine St., Detroit 26, Mich.	Recent Developments in Pharmacology and Therapeutics	September, 12 weeks, part time	15.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Applied Pharmacology and Therapeutics	Arranged, 20 hours, part time	100.00
	PHYSICAL MEDICINE		
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Physical Medicine	October 3-November 21, part time	30.00
The Surgeon General's Office, Dept. of the Army, Washington 25, D. C. At: Letterman Army Hospital, San Francisco, Calif.	Physical Medicine and Rehabilitation [11,14b]	November 12-15, full time	None
At: Walter Reed Army Hospital, Army Medical Center, Washington 12, D. C.	Physical Medicine in Conjunction with General Surgery [11,14b]	December 8, full time	None
American Congress of Physical Medicine, 30 N. Michigan Ave., Chicago 2, Ill. At: Shirley-Savoy Hotel, Denver, Colo.	Physical Medicine and Rehabilitation	September 4-7, full time	15.00
University of Minnesota, Center for Continuation Study, Minneapolis 14, Minn.	Physical Medicine and Rehabilitation for General Physicians	September 27-29, 3 days, full time	20.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Physical Medicine PM 30, Physical Therapy in General Practice	October 2-January 31, part time	85.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: Jewish Sanitarium and Hospital for Chronic Diseases	Clinical Rehabilitation	October, 10 weeks, part time	30.00
At: Kings County Hospital	Physical Medicine and Rehabilitation	October, 6 weeks, part time	20.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York, N. Y.	Physical Medicine	Arranged, 4 weeks, part time	100.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: Bellevue, University Hosps. and Institute of Physical Medicine and Rehabilitation	621-A Physical Medicine and Rehabilitation	September 24-June 14, 9 months, full time	700.00
	621-B Physical Medicine and Rehabilitation	January 14-October 11, 9 months, full time	700.00
	622-A Physical Medicine and Rehabilitation	Arranged, 12 or 24 weeks, full time	200.00 12 wks. 400.00 24 wks.
	623-A Physical Medicine and Rehabilitation	September 10-October 20, full time	100.00
	623-B Physical Medicine and Rehabilitation	January 14-February 23, full time	100.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Physical Medicine	October to May, full time	800.00

References will be found on page 599.

Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
PHYSIOLOGY			
University of Colorado School of Medicine, 4200 East Ninth Ave., Denver 7, Colorado	Pathological Physiology	September-December, part time	$ 28.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Clinical Physiology—A Basic Course	October 4, 10 sessions, part time	100.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Physiology PM 30, Physiology of the Digestive Tract	October 17-December 21, part time	40.00
New York Medical College, Flower and Fifth Ave. Hospitals, 99 E. 106th St., New York 29, N. Y.	Physiology of the Cardio-Vascular System and Blood	Arranged, 1 month, part time	75.00
	Physiology and Respiration	Arranged, 1 month, part time	75.00
	Physiology of the Nervous System	Arranged, 2 weeks, part time	50.00
	Physiology of the Special Senses	Arranged, 1 month, part time	75.00
	Physiology of the Endocrine System	Arranged, 1 month, part time	75.00
	Physiology and Chemistry of the Gastrointestinal Tract Digestion	Arranged, 1 month, part time	150.00
	Applied Physiology	Arranged, 36 hours, part time	300.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: University Hospital	5420-A Normal and Pathological Physiology Functional and Chemical Aspects	September 10-21, full time	115.00
PHYSIOLOGICAL CHEMISTRY			
Wayne University College of Medicine, 1512 St. Antoine St., Detroit 26, Mich.	Intermediary Metabolism	December, 12 weeks, part time	15.00
	Biological Catalysts	September, 12 weeks, part time	15.00
	Survey of Medical Chemistry	September, 12 weeks, part time	15.00
	Special Topics	September, 12 weeks, part time	15.00
	Seminar in Physiological Chemistry	Quarterly, 12 weeks, part time	15.00
PLASTIC SURGERY			
Illinois Masonic Hospital, 836 Wellington Ave., Chicago 14, Ill.	Introduction to Reconstructive Surgery of Nasal Septum and External Pyramid	October 6-13, full time	150.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Prosthetics	October to May, full time	800.00
POLIOMYELITIS			
University of Colorado School of Medicine, 4200 E. 9th Ave., Denver, Colo.[40]	Recent Advances in Infectious Diseases, Including Poliomyelitis	December, 2½ days, full time	20.00
Orthopaedic Hospital, Los Angeles, Calif.[40]	Poliomyelitis: Team Approach to Total Care	October 22-25, full time	15.00 [4]
Georgia Warm Springs Foundation, Warm Springs, Ga.[40]	Care of Acute and Convalescent Poliomyelitis	1st Monday in July, October and January, 1 week	None
Children's Medical Center, 300 Longwood Ave., Boston, Mass.[40]	Poliomyelitis	August 6-10, 1 week, full time	50.00
D. T. Watson School of Physiatrics, Leetsdale, Pa.[40]	Essentials in Care of Acute Poliomyelitis	Each summer, 5 days	10.00
PROCTOLOGY			
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Proctology	January 3-March 6, part time	50.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Lecture and Cadaver Course in Proctology	October 19, November 16 and January 9, 3 sessions, part time	75.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11, Mass.	Proctology I	October 22-26, full time	40.00
Essex County Medical Society, 38-40 Clinton St., Newark, N. J. At: Newark City Hospital	Office Proctology	Arranged, 12 sessions, part time	100.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: Jewish Hospital	Proctology	October, 6 weeks, part time	40.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Proctology, Gastroenterology and Operative Proctology (Cadaver)	October and January, 6 weeks, part time	200.00
	Clinical Proctology and Gastroenterology	October and January, 6 weeks, part time	100.00
	Clinical Proctology	Arranged, 6 weeks, part time	75.00
	Clinical and Cadaver Proctology	Arranged, 6 weeks, part time	175.00
	Clinical Gastroenterology	Arranged, 6 weeks, part time	75.00
PUBLIC HEALTH			
U. S. Public Health Service, Communicable Disease Center, Atlanta, Ga.	Laboratory Diagnosis of Bacterial Diseases, General Bacteriology Part 1	August 27-September 7, full time	None
	Laboratory Diagnosis of Parasitic Diseases, Part 1 Intestinal Parasites	September 3-21, full time	None
	Laboratory Diagnosis of Virus Diseases	September 3-28, full time	None
	General Bacteriology Part 2	September 10-21, full time	None
	Parasitic Diseases, Part 2 Blood Parasites	September 24-October 12, full time	None
	Laboratory Diagnosis of Enteric Disease, Part 1 Introductory Enteric Bacteriology	September 24-28, full time	None

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Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	PUBLIC HEALTH—Continued		
U. S. Public Health Service, Communicable Disease Center, Atlanta, Ga.	Part 2 Advanced Enteric Bacteriology	October 1-12, full time	None
	Laboratory Diagnosis of Rabies	October 1-5, full time	None
	Laboratory Diagnosis of Virus Diseases	October 8-12, full time	None
	Laboratory Diagnosis of Parasitic Diseases	October 22-26, full time	None
	Laboratory Diagnosis of Bacterial Diseases	October 22-26, full time	None
	Laboratory Diagnosis of Mycotic Diseases	October 29-November 2, full time	None
	Laboratory Diagnosis of Tuberculosis [41]	October 29-November 2, full time	None
	Clinical Chemistry Part 1, Introductory and General Procedures	October 29-November 2, full time	None
	Laboratory Diagnosis of Mycotic Diseases	November 5-16, full time	None
	Laboratory Diagnosis of Tuberculosis [41]	November 5-16, November 19-30, full time	None
	Clinical Chemistry Part 2, Quantitative Analysis	November 5-16, full time	None
	Laboratory Diagnosis of Mycotic Diseases Part 2, Systemic Fungi	November 19-30, full time	None
	Laboratory Diagnosis of Malaria	Arranged, 2 weeks, full time	None
	Identification of Medically Important Arthropods	Arranged, 2 weeks, full time	None
	Typing of Corynebacterium Diphtherine	Arranged, 1 week, full time	None
	Phage Typing of Salmonella Typhosa	Arranged, 1 week, full time	None
	Serologic Diagnosis of Rickettsial Diseases	Arranged, 1 week, full time	None
	Virus Isolation and Identification Techniques	Arranged, 2-4 weeks, full time	None
	Laboratory Diagnosis of Influenza	Arranged, 1 week, full time	None
	Advanced Quantitative Analyses in Clinical Chemistry	Arranged, 1 week, full time	None
	Toxicology	Arranged, 1 week, full time	None
Tulane University of Louisiana, 1430 Tulane Ave., New Orleans, La.	Master of Public Health (Tropical Medicine)	September 13-May 27, full time	$500.00
Johns Hopkins University School of Hygiene and Public Health, 615 N. Wolfe St., Baltimore 5, Md.	Public Health [22]	September 27-May 23, full time	800.00
Harvard School of Public Health, 55 Shattuck St., Boston 16, Mass.	Public Health	September 24, 8 months	800.00
University of Minnesota, School of Public Health, Minneapolis 14, Minn.	Public Health	October-June	90.00 [8]
Albany Medical College, 47 New Scotland Ave., Albany, N. Y. At: Albany, Buffalo, Rochester, Poughkeepsie and Syracuse	Extension Course in Public Health	Continuously, 6 days, part time	25.00
Columbia University School of Public Health, 600 W. 168th St., New York 32, N. Y.	Public Health (Master of PH)	September 25, 8 months, full time	660.00
	Hospital Administration (Master of Science)	September 25, 8 months, full time	660.00
University of Pittsburgh School of Public Health, Pittsburgh, Pa. At: Municipal Hospital	Public Health Practice, Occupational Health, Hospital Administration	September-June, 9 months	600.00 per year
	PULMONARY DISEASE		
The Surgeon General's Office, Dept. of the Army, Washington 25, D. C. At: Fitzsimons Army Hospital, Denver, Colo.	Pulmonary Diseases [11,14b]	September 24-28, full time	None
American College of Chest Physicians, 500 N. Dearborn St., Chicago, Ill. At: St. Clair Hotel, Chicago	Postgraduate Course in Diseases of the Chest	September 24-29, full time	50.00
At: Hotel New Yorker, New York	Postgraduate Course in Diseases of the Chest	November 12-17, full time	50.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Personal Course in the Technique of Physical Examination and Diagnosis of the Chest	September 19, 8 sessions, part time	60.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16, Ill.	Recent Advances in Diseases of the Chest	Fall, 1951, 10 sessions, part time	50.00
University of Minnesota, Center for Continuation Study, Minneapolis 14, Minn.	Diseases of the Chest for General Physicians	October 18-20, 3 days, full time	20.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Diseases of the Chest	October 16-December 11, part time	60.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y. At: Municipal Sanitarium, Otisville, N. Y.	Diseases of the Chest	October and November, part time	100.00
	Pulmonary Tuberculosis	Arranged, 3 weeks, full time	175.00
New York University Postgraduate Medical School, 477 First Ave., New York 16, N. Y.	5432-A Pulmonary Diseases in Relation to Industry	To be announced, full time, 5 days	60.00
Southwestern Society of General Physicians, Madeira, Ohio At: Hotel Gibson, Cincinnati, Ohio	Infectious Disease of Respiratory Tract	December 9, 1 day, full time	10.00
University of Oregon Medical School, 3181 S. W. Sam Jackson Park Road, Portland 1, Ore.	Diseases of the Chest	October 29-31, full time	30.00
	RADIOLOGY		
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Roentgenology	October 2-June 3, part time	100.00
University of Southern California, University Park, Los Angeles 7, Calif. At: Los Angeles County Hospital	Cardiac Roentgenology 2841	Arranged, 6 months, full time	500.00
The Surgeon General's Office, Dept. of the Army, Washington 25, D. C. At: Walter Reed Army Hospital, Army Medical Center, Washington 12, D. C.	Postgraduate Radiology [11,14b]	September 10-11, full time	None

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Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	RADIOLOGY—Continued		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	12 Month Course in Diagnostic Roentgenology and X-ray therapy	By appointment, full time	$750.00
	8 Month Course in Diagnostic Roentgenology	By appointment, full time	500.00
	Routine Clinical Course in Diagnostic Roentgenology and Fluoroscopy	3d Monday of every month, 2 weeks, full time	70.00
	2 Week Clinical and Didactic Course in Diagnostic Roentgenology and Fluoroscopy	1st Monday of each month, 2 weeks, full time	125.00
	High and Low Voltage X-ray Therapy	1st of every week, 1 or more weeks, full time	60.00 [13] 2 wks.
	Clinical Interpretation of X-ray Findings	September 20, 10 sessions, part time	80.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass.			
At: Peter Bent Brigham Hospital	General Radiology 1	July 1-June 30, throughout the year, 1 month, full time	150.00 [16] per month
At: Massachusetts General Hospital	General Radiology 2	July 1-June 30, throughout the year, 1 month, full time	150.00 [16] per month
At: Boston City Hospital	General Radiology 3	July 1-June 30, throughout the year, 1 month, full time	150.00 [16] per month
At: Childrens Hospital	Pediatric Radiology	July 1-June 30, throughout the year, 1 month, full time	150.00 [16] per month
Wayne University College of Medicine, 1512 St. Antoine St., Detroit 26, Mich.			
At: Receiving Hospital	Medical X-Ray Conference	Quarterly, 12 weeks, part time	15.00
University of Minnesota, Center for Continuation Study, Minneapolis 14, Minn.	Roentgenology of the Chest for Radiologists	October 29-November 3, full time	35.00
Essex County Medical Society, 38-40 Clinton St., Newark, N. J.			
At: Seton Hall Univ.	Diagnostic Roentgenology	Arranged, 14 sessions, part time	100.00
Columbia University, 630 W. 168th St., New York, N. Y.			
At: Mt. Sinai Hospital	Radiology PM 30, Introduction to Nuclear Physics for Physicians	October 16-February 19, part time	60.00
At: Hospital for Joint Diseases	Radiology PM 80, Roentgenographic Interpretation of the Diseases of Bones and Joints	October 3-December 19, part time	150.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23]			
At: Jewish Sanitarium and Hospital for Chronic Diseases	Clinical Radiology	October, 10 sessions, part time	20.00
At: Jewish Hospital	X-ray Diagnosis	October, 10 sessions, part time	20.00
New York Medical College, Flower and Fifth Ave. Hospitals, 20 E. 106th St., New York 29, N. Y.	Diagnostic Roentgenology	Arranged, 6 weeks, part time	150.00
	Radium and Roentgen Therapy	Arranged, 6 weeks, part time	150.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Roentgenological Interpretation and Technique	October and January, 3 months, full time	300.00
	Advanced Diagnostic Roentgenology and Radiotherapy	October and January, 3 months, full time	300.00
	Diagnostic Roentgenology and Radiation Therapy	October and January, 12 months, full time	1,000.00
	Practical Course in Superficial and Deep X-ray Therapy	Arranged, 4 weeks, part time	100.00
	Advanced Course in Radiotherapy	Arranged, 4 weeks, part time	100.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.			
At: Bellevue and University Hospitals	651-A Diagnostic Radiology for General Practitioners	October 5-May 23, part time	100.00
	651-B Diagnostic Radiology for General Practitioners	October 3-May 7, part time	100.00
	652-A Diagnostic Radiology	September 17-December 7, part time	100.00
	653-A Radiology, Basic Sciences	September 24-June 14, full time	700.00
	655-A Radiophysics	October 23-February 16, part time	75.00
American Roentgen Ray Society, Germantown Hospital, Philadelphia 44, Pa.			
At: Shoreham Hotel, Washington, D. C.	Instructional Courses	September, 4 days	5.00 [6]
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Radiology	October to May, full time	800.00
	SURGERY		
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	Traumatic Surgery	October 2-December 13, part time	50.00
Stanford University School of Medicine, 2398 Sacramento St., San Francisco, Calif.[49]			
At: Stanford Hospital	General Surgery	September 10-14, part time	75.00
At: San Francisco Hospital	General Surgery	September 10-14, part time	75.00
The Surgeon General's Office, Dept. of the Army, Washington 25, D. C.			
At: Brooke Army Hospital, Brooke Army Medical Center, Fort Sam Houston, Texas	General Surgery [11,14b]	October 1-5, full time	None
At: Walter Reed Army Hospital, Army Medical Center, Washington 12, D. C.	General Surgery [11,14b]	December 3-7, full time	None
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	Intensive 2 Weeks Course in Surgical Technique	July 9, 23, Aug. 6, 20, Sept. 10, 24, Oct. 8, 22, Nov. 5, 26, full time	200.00
	4 Week Course in Surgical Technique, Clinical Surgery, Surgical Anatomy, Pre- and Post-Operative Management	July 9, Aug. 6, Sept. 10, Oct. 8 and Nov. 5, full time	300.00
	2 Week Personal Course in General Surgery	September 24, full time	250.00
	1 Week Personal Course in Surgery of Colon and Rectum	September 17, October 15 and November 26, full time	100.00
	2 Week Course in Surgical Anatomy on the Cadaver, Clinical Surgery, Pre- and Post-Operative Management	July 23, Aug. 20, Sept. 24, Oct. 22 and Nov. 19, full time	150.00
	1 Week Personal Course in Breast and Thyroid Surgery	October 1, full time	150.00

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Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	SURGERY—Continued		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	10 Hour Personal Course in Gallbladder Surgery	October 22, full time	$100.00
	2 Week Intensive Review Course Considering Basic Principles in General Surgery	September 10, full time	200.00
	1 Week Personal Course in Esophageal Surgery	October 15, full time	150.00
	Personal Course in Thoracic Surgery	September 12, 10 sessions, part time	100.00
	1 Week Personal Course in Thoracic Surgery	October 8, full time	100.00
	Personal Course in Surgical Pathology, Gross and Microscopic	October 3, 10 sessions, part time	100.00
	Surgical Anatomy on the Cadaver	October 4, 10 sessions, part time	125.00
	Personal Course in Clinical Surgery	September 20, 10 sessions, part time	150.00
	Surgical Technique with Practice	September 5, 10 sessions, part time	200.00
	Personal Course in Surgical Diagnosis, Pre- and Post-Operative Management	September 19, 10 sessions, part time	100.00
	Basic Principles Concerned in General Surgery	September 14, 10 sessions, part time	100.00
	Practical and Didactic Course in Proctoscopy and Sigmoidoscopy	July 10, Aug. 7, 28, Sept. 25, Oct. 23, Nov. 20 and Jan. 15, 3 sessions, part time	50.00
	10 Hour Course in the Treatment of Varicose Veins	Every Monday, 2 days, full time	40.00
	10 Hour Course in the Treatment of Varicose Veins	1st and 3d Wednesday each month, part time	40.00
	Personal Course in Esophageal Surgery	October 2, 10 sessions, part time	150.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15, Mass. At: Massachusetts General Hospital	Experimental and Clinical Surgery	September 17-September 16, 12 months, full time [44]	800.00 [16]
University of Michigan Medical School, Dept. of Postgraduate Medicine, Ann Arbor, Mich. At: University Hospital	Clinical Exercises for Practitioners	October to December, part time	25.00
Wayne University College of Medicine, 1512 St. Antoine St., Detroit 26, Mich.	Surgery Seminar	Quarterly, 12 weeks, part time	15.00
University of Minnesota, Center for Continuation Study, Minneapolis 14, Minn.	Fractures and Traumatic Surgery for General Physicians	November 8-10, full time	20.00
Essex County Medical Society, 38-40 Clinton St., Newark, N. J.			
At: Newark City Hospital	Surgical Technique and Principles of Abdominal Surgery	Arranged, 17 sessions, part time, Monday or Friday	200.00
	Surgery of the Autonomic Nervous System	Arranged, 8 sessions, part time	100.00
At: Kessler Institute for Rehabilitation, West Orange, N. J.	51-G Surgical Anatomy of the Chest	Arranged, 12 sessions, part time	150.00
	Amputations	Arranged, 10 sessions, part time	100.00
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Surgery PM 30, Surgery of the Gastrointestinal Tract	October 15-November 9, full time	150.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[23] At: St. John's Episcopal Hospital	Office Surgery	October, 8 sessions, part time	20.00
New York Medical College, Flower and Fifth Ave. Hospitals, 29 E. 106th St., New York 29, N. Y.	Surgical Aspects of Peripheral Vascular Diseases	Arranged	200.00
	Gastrointestinal Surgery	Arranged	200.00
	Peritoneoscopy	Arranged	100.00
	Surgical Technique	Arranged, 50 hours	375.00
	Thoracic Surgery	October 29-November 17, 3 weeks, full time	325.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Combined Surgical Course, Including Cadaver Surgery and Gynecology	October and January, 3 months, full time	350.00
	Clinical Surgery	October and January, 6 weeks, full time	100.00
	Clinical and Operative (Cadaver) Surgery	October and January, 6 weeks, full time	200.00
	Traumatic Surgery, Including General Surgery, Orthopedic Surgery and Physical Medicine	Arranged, 2 months, part time	200.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y.			
At: Bellevue and University Hospitals	5910-A Surgery of the Head and Neck [30]	January 7-12, full time	100.00
	660-A Anatomy and Physiology of the Autonomic Nervous System and Their Clinical Application	January 14-19, full time	150.00
	661-A Review of General Surgery (for Specialists)	September 24-October 20, full time	300.00
	663-A Recent Advances in Surgery	September 10-22, full time	200.00
	665-A Surgery	September 24-June 14, full time	700.00
At: Beekman-Downtown, Bellevue, University and Gouverneur Hospitals	666-A Diagnosis and Treatment of Trauma	December 3-8, full time	100.00
At: Beekman-Downtown Hospital	6610-A Trauma of the Genitourinary System [1]	September 11-October 16, part time	50.00
	6611-A Pitfalls in Internal Fixation of Fractures (for Specialists)	November 12-17, full time	100.00
At: Bellevue Hospital	551-A The Intervertebral Disc [30]	October 8-12, full time	100.00
	552-A Diagnosis and Treatment of Peripheral Nerve Injuries [30]	January 14-18, full time	125.00
University of Oklahoma School of Medicine and University Hospitals, Oklahoma City, Okla. At: Hillcrest Hospital, Tulsa	Postgraduate Course in General Surgery	October 3-5, full time	15.00
University of Oregon Medical School, 3181 S. W. Sam Jackson Park Road, Portland 1, Ore.	General Surgery	November 5-9, full time	50.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	General Surgery	October to May, full time	800.00

References will be found on page 599.

Postgraduate Continuation Courses for Physicians—July 1, 1951 to Jan. 15, 1952—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	THERAPY		
Columbia University, 630 W. 168th St., New York, N. Y. At: Mt. Sinai Hospital	Medicine PM 44, Recent Advances in Therapy	October 17-December 5, part time	$ 35.00
University of Texas Postgraduate School of Medicine, 207 A Hermann Professional Bldg., Houston, Texas At: Robert B. Green Memorial Hospital	Modern Therapeutics	October 26, 25 sessions, part time	25.00
	UROLOGY		
College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33, Calif.	General Urology Genito-Urinary Diseases	January 2-February 27, part time November 12-16, part time	35.00 50.00
Stanford University School of Medicine, 2398 Sacramento St., San Francisco, Calif.[49] At: Stanford Hospital	Urology for General Practitioners	September 10-14, part time	75.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12, Ill.	2 Week Intensive Course in Urology	September 24, full time	225.00
American Urological Association, 102-110 Second Ave., Rochester, Minn. At: Hotel Windsor, Montreal, Quebec [45]	Graduate Seminar on Urology	January 7-12, 5 days	50.00
At: Los Angeles, Calif.[46]	Urological Postgraduate Convention	November, 5 days	60.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16, N. Y.[33] At: State University College of Medicine at N. Y. C.	Urology	October, 1 month, part time	50.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19, N. Y.	Urology	October 1, 8 months, full time	800.00
New York University Post-Graduate Medical School, 477 First Ave., New York 16, N. Y. At: Bellevue and University Hospitals	672-A Urology 674-A Refresher Course in Basic Urology	September 24-June 14, full time November 12-17, full time	700.00 60.00
University of Pennsylvania Graduate School of Medicine, Philadelphia 4, Pa.	Urology	October to May, full time	800.00
	VENEREAL DISEASE		
U. S. Public Health Service Medical Center, Hot Springs National Park, Ark.	Venereal Disease Postgraduate Course	October 15-20, full time	None
U. S. Public Health Service, Atlanta, Ga.	Laboratory Diagnosis of Syphilis	September 10-21 October 22-November 2, full time	None None
	Preparation and Standardization of Serologic Reagents Used in the Laboratory Diagnosis of Syphilis	November 5-23, full time	None
Wayne University College of Medicine, 1512 St. Antoine St., Detroit 26, Minn. At: Social Hygiene Clinic	Conference on Venereal Disease	Quarterly, 12 weeks, part time	15.00
Institute for the Study of Venereal Disease of the University of Pennsylvania, 34th and Locust Sts., Philadelphia 4, Pa.	6 Months Essential Basic Training Course	Arranged, full time	Arranged
	4 Week Intensive Review Course	Arranged, full time	Arranged
	3 Week Intensive Review Course	Arranged, full time	Arranged
	10 Day Refresher Course	Arranged, full time	Arranged

1. $5.00 for all of the courses.
2. Tentative course.
3. Plus $10.00 laboratory fee.
4. Physicians may apply to National Foundation for Infantile Paralysis for financial assistance to attend course.
5. Residents. Non-residents $225.00 plus incidental fees of about $50.00 for both residents and non-residents.
6. Free to residents of radiology.
7. For members of medical society and A. M. A. $50.00 to non-members.
8. Iowa State Pediatric Society members. Non-members $10.00. Sponsored by Iowa State Pediatric Society in conjunction with U-Iowa.
9. Surgery $910.00.
10. For 1 month, $250.00 for 3 months, $450.00 for 6 months, $650.00 for 9 months and $850.00 for 12 months.
11. Attendance encouraged from Regular, Reserve and National Guard medical officers on active duty with the Armed Forces; Reserve and National Guard medical officers, with the Armed Forces, not on active duty, at no expense to the government, and civilians, at no expense to the government.
12. Attendance limited to Regular, Reserve and National Guard Army medical officers and Regular, Reserve and National Guard Air Force medical officers on active duty. 25 spaces available at each hospital.
13. Attendance limited to Regular, Reserve and National Guard medical officers on active duty with the Army, Navy and Air Force; and civilians on a space available basis, limited to 8 spaces in each class.
14. Application Procedure. Applications should be forwarded so as to reach the addressees listed below not later than one month prior to the opening date of the course:
    (a) Applications from Army Medical Officers on active duty only, will be forwarded to the Office of the Surgeon General, Attention: Personnel Division, Career Management Branch.
    (b) Army Medical Officers not on active duty and civilian physicians should be forwarded through channels to the Commander of the installation offering the course. Applications will be approved on a space available basis.
    (c) Personnel from other federal agencies. Applications should be made through channels as appropriately announced by each agency.
15. Stated 2 week period may be followed by additional studies at $100 per week. Course also may be taken by Philadelphia area physicians on 6 consecutive Thursdays, 36 hours, at $150.00.
16. In addition to tuition fee indicated there is a $5.00 registration fee which covers all courses taken within a 12 month period.
17. Course may be taken 1 to 12 months. Tuition prorated accordingly.
18. Course may be taken 3-12 months. Tuition prorated accordingly.
19. For those who find it desirable to spend a shorter period of time than 1 year, arrangements may be made to take this course from 1 to 9 months if facilities permit. Derm. and Syph. 2.
20. For physicians residing outside of Cleveland, $20.00 for those residing in Cleveland, interns no charge.
21. 1st year. $100.00 each successive year.
22. Special training courses in V. D., Mental Hygiene, M and C Health, Hospitals Administration and Medical Care Administration.
23. Of the Medical Society of the County of Kings and State University College of Medicine at N. Y. C.
24. Kansas Medical Society and Kansas State Board of Health also sponsoring.
25. Menninger Foundation, Winter Veterans Administration Hospital, Topeka State Hospital and Kansas State Board of Health and Kansas Medical Society sponsoring.
26. New Jersey State Dept. of Health also sponsors.
27. Also 20 senior Surgical Residents.
28. Or any 4 weeks, $125.00 each week.
29. Designed to meet the requirements for certification by the American Board.
30. For Specialists.
31. Or an equivalent period on a part time basis.
32. In cooperation with Michigan Department of Health, University of Michigan Medical School and Wayne University College of Medicine.
33. Co-sponsorship of Washington State Medical Ass'n. and Washington Dept. of Health.
34. Sponsored by American Psychoanalytic Ass'n., New York.
35. Advanced Candidates in training only.
36. Open only to Physicians who have been formally approved and accepted for training by the Admissions Committee of the Philadelphia Psychoanalytic Institute.
37. Bingham Associates Fund, Contributing agencies.
38. There may be available fellowship endowment stipends for bona-fide pathology residents. There has been in the past and may be possible in the future.
39. Also sponsored by Oklahoma State Dept. of Health.
40. In cooperation with National Foundation for Infantile Paralysis.
41. In cooperation with Division of Tuberculosis, Bureau of State Services, USPHS.
42. No charge for room and board.
43. 4 weeks $110.00, 1 month $200.00 and 2 months $300.00.
44. Under special circumstances student may begin on a date other than September 17 and may be admitted for a period of 6 to 12 months.
45. Sponsored by Northeastern section of the American Urological Ass'n., Buffalo, N. Y.
46. Sponsored by Los Angeles Urological Society, L. A.
47. Sponsored by USPHS and Arkansas State Board of Health.
48. Course given by Hahnemann Medical College, Dept. of Cardiology, Philadelphia.
49. Co-sponsored by San Francisco Dept. of Public Health.

MEDICAL LITERATURE ABSTRACTS

AMERICAN

A.M.A. Am. J. Diseases Child., Chicago

81:313-464 (March) 1951

*Familial Leukemia: Report of Leukemia in Five Siblings, with Brief Review of Genetic Aspects of this Disease. R. C. Anderson.—p. 313.
Adrenal Cortex Extract in Pediatrics: Possible Effect on Respiratory System of Newborn. R. W. Provenzano, P. McGovern, R. Schultz and J. Hester.—p. 323.
Prevention of Minor Skin Irritation (Miliaria) and Impetigo in Newborn. J. Glaser, M. L. Thompson and T. D. Benson.—p. 329.
*Adverse Mercurial Reactions in Form of Acrodynia and Related Conditions. J. Warkany and D. M. Hubbard.—p. 335.
Cleidocranial Dysostosis Syndrome: Report of Case in Negro Child Exhibiting Retarded Growth. R. B. Scott and L. O. Banks.—p. 394.
Dermatomyositis with Nephritis in Negro Child. J. E. Bradley, M. E. Drake and H. P. Mack.—p. 403.
Mixed Tumor of Liver: Report of Case with Review of Literature. D. H. Milman and D. M. Grayzel.—p. 408.

Familial Leukemia.—A family is reported on in which five of eight siblings have had leukemia in early childhood. Except for a leukemoid reaction in another sibling, no other blood disorders, and only one case of cancer, are known among the 135 near and distant relatives. A brief review is made of the literature dealing with hereditary factors in leukemia. It appears that a genetic factor is often involved, but definite conclusions regarding the mode of inheritance would be premature. Workers generally favor the idea of a low penetrance dominant gene, but such a family as the one reported on in this paper would suggest instead a rare recessive gene with high penetrance. It may well be that in leukemia, as in many other diseases, the mode of inheritance varies in different families, owing to differences in the predisposing genes themselves. There have been 39 previous reports in the literature on the occurrence of multiple cases of leukemia within a single family but this is the first reported family with leukemia in more than three siblings. Videback found that 8.1% of 209 leukemic patients had relatives with leukemia.

Mercurials and Acrodynia.—Warkany and Hubbard suggest that exposure of hypersensitive children to mercury is the most important factor in the causation of infantile acrodynia. Exposure to mercury was demonstrated in 38 of 41 acrodynic children by the presence of the metal in their urine. In 23 of these children mild mercurous chloride (calomel), teething powders or anthelmintic tablets containing mild mercurous chloride, ammoniated mercury ointment and mercury bichloride used for rinsing diapers were ascertained to be the sources of mercury. Idiosyncrasy to mercury that manifests itself in acrodynia exists particularly in infants and small children, while older children and adults have a higher tolerance. There are undoubtedly other factors that lower tolerance, but they are unknown at present. Acrodynia is only one of the forms in which hypersensitivity to mercury can manifest itself. Acrodynia has some but not all the recognized manifestations of mercury poisoning. Transitional states between acrodynia and various established forms of mercury poisoning exist. It is possible that metals, drugs and toxic substances other than mercury produce disease pictures resembling acrodynia. The effectiveness of dimercaprol (BAL) in the treatment of acrodynia could not be clearly demonstrated in the series of cases described. It is possible that in cases of long standing the effect is not so striking as in cases of acute mercury poisoning.

The Association library lends periodicals to members of the Association and to individual subscribers in Continental United States and Canada for a period of five days. Three journals may be borrowed at a time. Periodicals are available from 1940 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

A. M. A. Arch. Dermat. and Syphilology, Chicago

63:289-408 (March) 1951

Further Studies on Mechanism of Adhesive Tape Dermatitis. S. M. Peck, T. J. Michelfelder and L. L. Palitz.—p. 289.
Interstitial Radium Therapy: Description of Short Intensive Technic. C. F. Lehmann and J. L. Pipkin.—p. 312.
Early Prognosis of Lupus Erythematosus Discoides. T. Cochrane.—p. 323.
Neutrophils Resembling L. E. Cells in Artificial Blisters. J. B. Watson, P. A. O'Leary and M. M. Hargraves.—p. 328.
*Dermatitis and Secondary Leukoderma Due to Fabric-Lined Rubber Gloves: Report of Case. I. Botvinick.—p. 334.
Concurrent Infestation with Rare Mite and Infection with Common Dermatophyte. A. A. Fisher, A. G. Franks and M. Wolf.—p. 336.
Rapid Permanent Staining and Mounting of Skin Scrapings and Hair. M. A. Gordon.—p. 343.
Histopathology of Nodose Lesions of Lower Extremities. L. H. Winer.—p. 347.
Seborrheic Keratosis and Verruca, with Special Reference to Melanotic Variety. S. W. Becker.—p. 358.

Dermatitis and Leukoderma Due to Rubber Gloves.—For patients with so-called "housewife's" eczema of the hands, dermatologists frequently recommend the use of cotton or fabric-lined rubber gloves for household chores. A recent experience suggests that this recommendation carries with it added risks. A housewife complained of an extremely pruritic dermatitis. It was learned that she had used bluettes® gloves in her household tasks. Patch tests were performed with portions of smooth blue rubber of the outer surface and the rubberized fabric of the inner surface. Results of the tests were positive. The dermatitis responded slowly to treatment. When the woman resumed her household tasks she wore cotton gloves under golden glo® (natural latex) gloves. This was followed by a flare-up. Dryness and superficial scaling of the hands were evident. Blotchy areas of erythema appeared on the face a few hours before the patient's admission to the hospital. On the second day she manifested a generalized pruritic, erythematous, urticarial rash and became extremely disturbed emotionally, to the point of requiring restraints. The patient was treated for varying periods with oral diphenhydramine hydrochloride, doxylamine (decapryn®) succinate, chloral hydrate, codeine, meperidine (demerol®) hydrochloride, colloidal and coal tar solution baths, wet dressings with aluminum acetate solution in 1 to 15 dilution, 1% salicylic acid in petrolatum and one fever treatment with intravenously administered typhoid vaccine. It was concluded that the patient had a contact dermatitis and dermatitis medicamentosa and that diphenhydramine hydrochloride was responsible for the emotional disturbance. Later, scattered areas of leukoderma developed at the sites where the dermatitis had been severest and at the sites of the patch tests. Six months later, repigmentation was noticeable. It was found that one of the bluettes® contained monobenzyl ether hydroquinone, which is the only compound used in the manufacture of rubber articles that has been reported to produce transitory leukoderma.

Anesthesiology, New York

12:1-134 (Jan.) 1951. **Partial Index**

Physiology of Pain: Abnormal Neuron States in Causalgia and Related Phenomena. R. W. Gerard.—p. 1.
Clinical Evaluation of Some New Curare Preparations. D. W. Hesselschwerdt, E. L. Rushia and S. C. Cullen.—p. 14.
Use of Hyaluronidase in Regional Nerve Blocks. J. E. Eckenhoff and C. K. Kirby.—p. 27.
Manually Assisted and Controlled Respiration: Its Use During Inhalation Anesthesia for Maintenance of Near-Normal Physiologic State—Review. W. G. Watrous, F. E. Davis and B. M. Anderson.—p. 33.
Syncurine in Endotracheal Intubation. P. J. Bailey and J. F. Murphy.—p. 63.
Effect of Intravenous Pentothal Sodium With or Without Inhalation of Oxygen on Liver Function. C. H. Walton, J. Saldamando and W. M. Enger.—p. 67.
Peridural Anesthesia in Thoracic Surgery: Review of 677 Cases. O. B. Crawford, P. Ottosen, W. W. Buckingham and C. A. Brasher.—p. 73.
Blood Transfusion Reactions from Apparently Compatible Blood. M. M. Strumia.—p. 85.
Blood Loss During Surgical Operations. J. J. Bonica and C. S. Lyter.—p. 90.

Blood, New York

6:101-194 (Feb.) 1951

Chronic Hemolytic Anemia with Erythrocyte Fragility to Cold and Acid. S. H. Liu.—p. 101.
Limitation of Hemolysis in Experimental Transfusion Reactions Related to Depletion of Complement and Isoantibody in Recipient: Observations on Dogs Given Successive Transfusions of Incompatible Red Cells Tagged with Radioactive Iron. R. M. Christian, W. B. Stewart, C. L. Yuile and others.—p. 142.
Cholinesterase of Erythrocytes in Anemias. J. C. Sabine.—p. 151.
Comparisons Between Bone Marrow Differentials Prepared from Particles and from Random Samples of Aspirate and Determinations of the Dilution of Aspirate with Peripheral Blood Utilizing Radioactive Phosphorus (P^{32}). R. S. Fadem and I. Berlin.—p. 160.
Chemical Studies of Normal and Leukemic Bone Marrow. A. A. Dietz and B. Steinberg.—p. 175.

Journal of Investigative Dermatology, Baltimore

16:71-118 (Feb.) 1951

Comparison in Treatment of Acne Vulgaris. T. Pasieczny and P. Grant.—p. 71.
Local Injections of Streptomycin with Intracaine and Epinephrine in Treatment of Cutaneous Tuberculosis: Report of Three Cases. P. D. Foster.—p. 75.
Procaine Penicillin in Early Yaws. F. N. Guimaraes.—p. 77.
Improved Method for Separation of Epidermis of Laboratory Animals. P. Flesch, A. M. Kligman and G. D. Baldridge.—p. 81.
Effects of Applications of Various Substances on Epidermis of Rat. E. O. Butcher.—p. 85.
Effect of X-Radiation on Experimentally Produced Cutaneous Sensitivity. S. G. Cohen, L. D. Mayer and L. H. Criep.—p. 91.
Use of Hyaluronidase by Iontophoresis in Treatment of Generalized Scleroderma. R. J. Popkin.—p. 97.
Oxidative Inactivation of Poison Ivy Allergens by Peroxidase. I. W. Sizer.—p. 103.
Observations on Biotin. F. Kalz, V. A. Kral and R. R. Forsey.—p. 111.

Michigan State Medical Society Journal, Lansing

50:145-224 (Feb.) 1951

Treatment of Epilepsy. F. A. Gibbs.—p. 145.
*Late Effects of Cerebral Birth Injury. C. F. McKhann, W. D. Belnap and C. S. Beck.—p. 149.
Prevention of Behavior Problems in Pediatric Practice. L. F. Hill.—p. 153.
Neurogenic Hypertension: Chemical Approaches to Its Amelioration. F. F. Yonkman.—p. 160.
Aneurysms and Arteriovenous Fistulas. H. B. Shumacker Jr.—p. 168.
*Role of Adrenal Cortex in Certain Peritoneal, Pleural and Pericardial Effusions. R. C. Moehlig and A. J. Steinbach.—p. 174.

Late Effects of Cerebral Birth Injury.—Over half of 419 children who had mental retardation, convulsive disorders, and cerebral palsy, singly or in combination, had a history suggestive of birth injury, while in about one of six cases the difficulty could be traced to postnatal injury. In only one out of six did the findings suggest a hereditary or congenital defect as the cause of neurological difficulty. Excluding cases of severe idiocy, 172 cases of probable birth injury were studied by pneumoencephalography, electroencephalography, and psychometric examination. Premature separation of the placenta, placenta previa, kernicterus, prematurity, oversized infant, toxemia, and maternal illness are listed as probable causative and contributory factors in the prenatal period, whereas "heavy" anesthesia and sedation, prolonged labor, the use of oxytocics, breech delivery, cesarean section, cord defects (prolapse, tightening about the neck, or holding back the head), the use of high forceps, and precipitous delivery are the probable causative factors at the time of birth. Sedation and heavy anesthesia appeared as possible causes of 17% of birth injuries. Second in prominence was a story of the head being held back by the nurse or intern until the physician arrived. This is a common practice. Cortical atrophy revealed in pneumoencephalograms is accepted as presumptive evidence that the brain was injured following complete formation. This finding, together with changes attributable to organic disease in the electroencephalographic tracings, was present in almost all patients with a known history of birth injury and in an unsuspectedly large number of other children in whom the history was obscure. Decreased cerebral blood flow was present in cases in whom gliosis might have followed cerebral injury. Behavior disorders in children without retardation, spasticity, or convulsions appear to be possible sequelae of milder degrees of cerebral injury at birth.

Role of Adrenal Cortex in Peritoneal, Pleural, and Pericardial Effusions.—Moehlig and Steinbach present a hypothesis to explain certain peritoneal, pleural, and pericardial effusions, which are found in Meigs' syndrome of ovarian fibroma, some cases of severe hypothyroidism, intestinal lipodystrophy (Whipple's disease), and Addison's disease. This hypothesis assumes that adrenal cortical deficiency is present in all of these syndromes and that this in turn produces disturbances of the serosal layer in these diseases. Embryologic relationships suggest why the adrenal cortex influences the development and function of the mesothelium, and it is already known that the adrenal cortex influences the development and function of other mesodermal structures, namely, the epithelium of most of the urogenital organs, and the striated muscles, both skeletal and cardiac. As evidence in support of their hypothesis the authors cite the following observations. A case of severe hypothyroidism with tremendous ascites and hydrothorax cleared up completely with the administration of adequate dosage of thyroid substance. Since patients with untreated myxedema show an inadequate adrenal cortex response to pituitary adrenocorticotropic hormone (ACTH), the possibility arises that there was adrenal cortical insufficiency in this case and that the administration of desiccated thyroid restored the capacity of the adrenal to respond to endogenous pituitary adrenocorticotropic hormone. This in turn may have corrected the mesothelial disturbance. In Whipple's intestinal dystrophy too there are sometimes signs of increased pigmentation of the skin and hypotension suggestive of functional impairment of the adrenal cortex. The involvement of the mesothelial serous layers then could be due to changes in the electrolyte and water metabolism. The possible relationship of the adrenal cortex to intestinal absorption has been the subject of speculation in both Whipple's disease and sprue, and some patients with Addison's disease have steatorrhea as well as ascites, hydrothorax, and pericardial effusion.

New England Journal of Medicine, Boston

244:239-274 (Feb. 15) 1951

Cardiac Manifestations of Friedreich's Ataxia. A. S. Nadas, M. M. Alimurung and L. A. Sieracki.—p. 239.
*Extreme Hyperglobulinemia in Subacute Hepatic Necrosis. H. J. Zimmerman, P. Heller and R. P. Hill.—p. 245.
Diagnostic and Therapeutic Problems in Benign Mediastinal Tumors. G. E. Lindskog and H. W. Kausel.—p. 250.
Hospital Outbreak of Infections with Salmonella Newington. F. A. Neva, R. J. Nelson and M. Finland.—p. 252.
Medicine as Social Instrument: The Hospital and the Community. P. R. Hawley.—p. 256.

Extreme Hyperglobulinemia in Hepatic Necrosis.—A man, aged 36, was hospitalized because of jaundice of three weeks' duration. No other symptoms were present, and the past medical history shed no light on the present illness. A soft, rounded, slightly tender liver edge was felt 3 cm. below the right costal margin. Laboratory tests disclosed extreme hyperglobulinemia and definite hypocholesterolemia. Electrophoretic patterns of the serum revealed that the elevation of globulin was due almost entirely to the gamma globulin level. The highest value of gamma globulin previously reported was approximately 4 gm. per 100 cc. In the reported case the gamma globulin level was 7.31 gm. per 100 cc. For about eight weeks the symptoms changed little, but then there was a turn for the worse and death followed nine days later. The anatomic diagnosis was subacute hepatic necrosis with cirrhosis. Whenever extreme hyperglobulinemia has been described in liver disease, it has been associated with subacute hepatic necrosis or postnecrotic cirrhosis, on a presumed infectious or toxic basis. Whereas no case of Laënnec's cirrhosis has been observed with serum globulin values above 6.12 gm. per 100 cc., four patients with postnecrotic cirrhosis have been described, in addition to the case described above, as having total protein values above 11 gm. per 100 cc., or a globulin value above 8 gm. per 100 cc., or both. It is suggested that marked hyperglobulinemia represents a mounting production of antiliver protein antibody that continues to cause necrosis of the liver. Judging by the few cases in which it has been seen, extreme hyperglobulinemia in liver disease indicates an unfavorable prognosis.

New Orleans Medical and Surgical Journal

103:323-364 (Feb.) 1951

Experiences with New Anticoagulant. G. W. Allen and E. Hull.—p. 323.
Tick Paralysis: Implicating Amblyomma Maculatum. R. S. Paffenbarger Jr.—p. 329.
Weakness of Lower Extremities as Complication of Pregnancy. H. W. Neumann.—p. 332.
Management of Recent Nasal Injuries. F. L. Bryant.—p. 336.
Management of Coccogenic Dermatoses. J. K. Howles.—p. 343.
Malignant Lesions of Skin. J. W. Tedder.—p. 350.
Pathologic Changes in Hematopoietic System Following Antilymphomatous Drugs. P. Pizzolato.—p. 353.

New York State Journal of Medicine, New York

51:425-560 (Feb. 15) 1951

Clinical Results of Treatment of Cancer of Prostate. T. F. Howley.—p. 481.
Diagnosis and Treatment of Testis Tumors. A. L. Dean.—p. 485.
Anomalies of Kidney. M. Campbell.—p. 493.
Urachal Cysts with Report of Two Cases. H. Engster.—p. 499.
Conservative Surgery of Hydronephrosis. V. J. O'Conor.—p. 503.
Modern Concepts of Diathermy. J. Weiss.—p. 506.
Role of Physical Therapy in Rehabilitation. G. M. Raus.—p. 509.
Water as Medium for Therapeutic Exercise. R. L. Bennett.—p. 513.
Development of Care of the Orthopedically Handicapped in New York City. E. M. Bick.—p. 516.
Role of Complete Surgery in Diseases of Pelvis. C. E. Clark and T. V. Judge.—p. 520.
Leiomyosarcoma of Uterus. J. W. Tandatnick and J. I. Kushner.—p. 525.
Migraine Headache: Analysis of 124 Cases Treated by Head-Traction Manipulation and Thiamin Chloride. M. M. Braaf.—p. 528.

Ohio State Medical Journal, Columbus

47:97-192 (Feb.) 1951

Sickle Cell Anemia Simulating Rheumatic Fever in White Race. L. P. Caccamo and L. A. Strutner.—p. 121.
Arterial Embolism—Report of Case. D. C. Caudill, M. T. Hoerner and O. Wright.—p. 125.
Benzodioxane Test in Hypertension: Case Report with Autopsy Findings. R. L. Fulton.—p. 127.
*Observations on 360 Cases of Primary Syphilis (Treated with Penicillin Alone or with Penicillin plus Mapharsen® and Bismuth). E. H. Jones Jr.—p. 131.
Cerebral Angiography. F. H. Mayfield, E. S. Lotspeich Jr., J. R. Simpson and C. R. Hunter.—p. 134.
Mediastinal Hemangiofibroma: Case Report. J. V. Horst and O. A. Beatty.—p. 138.
Carcinoma of Cervix in Pregnancy. R. R. Maier and M. Klein.—p. 139.

Treatment of Primary Syphilis.—Of 360 patients with primary syphilis reported on, 268 were treated with penicillin and 92 with penicillin plus neoarsphenamine (mapharsen®) and bismuth. All the patients completed a minimum of six months of regular monthly follow-up. The median age of incidence was 24 years. The sex ratio was 85 male patients to 15 female patients. There was a febrile Herxheimer reaction in 281 patients. Not the presence, the height, or the absence of a febrile Herxheimer reaction was valuable for prediction of success or failure of treatment. In general the seronegative and low titer seropositive (earlier) primary syphilis patients had a better chance of successful treatment than those with high titers (later). In general the height of the serologic titer at the time of treatment was directly proportional to the length of time required to attain seronegativity, but there were many exceptions to this generalization, as shown in one patient with a titer of 1:128 who took 24 months to achieve seronegativity. Early diagnosis, preferably by dark field test, is indispensable for good results. One week of penicillin therapy totaling up to 4,800,000 units proved to be not enough for primary syphilis. In the author's experience penicillin plus neoarsphenamine and bismuth has proven somewhat more efficacious than penicillin alone, the penicillin in each instance being confined to one week of therapy and the bismuth and neoarsphenamine, when added, requiring eight additional weekly treatments.

Psychoanalytic Quarterly, Albany, N. Y.

20:1-164 (Jan.) 1951. **Partial Index**

Technical Implications of Ego Psychology. H. Hartmann.—p. 31.
Early Development of Ego: Identification in Infancy. I. Hendrick.—p. 44.
Ego Psychology and Psychotherapy. M. M. Gill.—p. 62.
Character and Resistance. R. Sterba.—p. 72.
Traumatic Effect of Surgical Operations in Childhood on Integrative Functions of Ego. M. L. Miller.—p. 77.

Texas State Journal of Medicine, Fort Worth

47:65-130 (Feb.) 1951

Low Back Pain: I. Studies on Pain Intensity in Obstetrics Including Causes, Reactions and Methods of Control. C. T. Javert and J. D. Hardy.—p. 68.
Id.: II. Urologic Aspects. E. White.—p. 75.
Id.: III. Neurologic Aspects. C. E. Patterson.—p. 78.
Diagnostic and Therapeutic Nerve Block. R. C. L. Robertson.—p. 79.
Diagnosis of Upper Abdominal Pain. M. P. Kelsey.—p. 82.
Hematuria: Its Significance and Management. H. M. Spence.—p. 86.
*Bilateral Cortical Necrosis of Kidneys: Report of Two Cases and Considerations of Pathogenesis. A. Smith and E. E. Muirhead.—p. 88.
Renal Calculi: Etiology and Differential Diagnosis. V. Vermooten.—p. 96.
Retropubic Prostatectomy. K. B. King and F. Fuqua.—p. 101.
Sliding Internal Fixation in Fractures of Long Bones Allowing End-to-End Impaction. L. W. Breck.—p. 105.
Surgical Repair of Scarring and Ulceration of the Anterior Tibial Surface. C. W. Tennison.—p. 108.

Bilateral Cortical Necrosis of Kidneys.—The occurrence of bilateral cortical necrosis of the kidneys is reported in a woman aged 29, seven months pregnant, and in an infant with diarrhea and circulatory failure. Both patients died, and necropsy was performed. Both cases demonstrated the greater sensitivity of the outer zones of the renal cortex to the lesion of cortical necrosis. There was focal necrosis in the zone immediately adjacent to the medulla in both cases, and consequently the juxtamedullary zone was not completely spared. In the case of the woman necrosis of the blood vessels was revealed only within the necrotic areas, and no classic thrombosis was seen. The glomeruli within the necrotic areas were distinctly congested. This distention of glomerular capillaries by red blood cells precluded the primary occurrence of thrombosis within preglomerular arteries. These observations are in keeping with those cited in the literature. The pathogenesis of bilateral (symmetrical) cortical necrosis of the kidneys is controversial. The condition is considered to result from ischemia, but various concepts of the cause of the ischemia have been advanced. Cortical necrosis was induced in rabbits by the injection of staphylococcic toxin into a peripheral vein and directly into the renal artery. Two major morphological changes, marked glomerular and postglomerular congestion, suggesting stasis, and cortical necrosis were noted. No thromboses or arterial necrosis outside the necrotic areas were observed. The thesis of Dunn and Montgomery, which considers cessation of glomerular blood flow as the cause of the ischemia, appears to be supported by these observations. It is suggested that the toxin causing damage to the glomerular membrane thereby effects a rapid escape of plasma fluid into the tubule and that postglomerular capillary stasis also may play a part in the mechanism of ischemia. The immediate cause of the glomerular damage was not elucidated in the authors' experiments. Although cortical necrosis was produced readily, the same technique did not yield lower nephron nephrosis. These observations justify caution in ascribing varying intensities of the same mechanism as operating in the pathogenesis of the two lesions.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

59:49-96 (Feb.) 1951

Experiences with Natural Childbirth: Report of 200 Cases from Private Practice and Public Clinics, Including Four Sets of Twins. J. E. Stoll.—p. 49.
Diagnosis and Treatment of Radiation Sickness in Atomic Warfare. E. P. Cronkite.—p. 55.
Oral Lesions in Female Patient: Review. F. G. Everett.—p. 62.
Protein, Fat and Carbohydrate in Etiology of Eclamptic Toxemia. S. S. Garrett.—p. 66.
Estimation of Dose from Radiation Applicators Used in Treatment of Carcinoma of Uterine Cervix. W. Gaines and N. E. Scofield.—p. 71.
Pregnancy Complicated by Spina Bifida and Meningomyelocele: Review of Literature and Report of Case. J. L. Slater and K. P. Russell.—p. 76.
Postoperative Vocal Cord Fixation. C. P. Schlicke.—p. 84.
Traumatic Division of Perineal Body and Rectovaginal Septum: Case Report with Repair of Defect. R. N. Rutherford and T. M. Armstrong.—p. 88.
Clinical Evaluation of Surital. A. C. Kirchhof.—p. 90.

FOREIGN

Journal of Pathology and Bacteriology, Edinburgh

62:501-676 (Oct.) 1950. **Partial Index**

*Nature of Neurofibromatosis and Related Lesions, with Special Reference to Certain Lesions of Bones: Illustrating Influence of Intrinsic Factors in Diseases when Development of Body is Abnormal. K. Inglis. —p. 519.
Distribution of Haemolysins in Pathogenic and Non-Pathogenic Staphylococci. S. D. Elek and E. Levy.—p. 541.
Pulmonary Haemosiderosis of Cardiac Origin. A. C. Lendrum.—p. 555.
Tetanus Intoxication of Brain Stem in Rabbits. E. A. Wright, R. S. Morgan and G. P. Wright.—p. 569.
Solitary Plasmocytoma of Humerus in Mesothorium Worker. G. Lumb. —p. 585.
Further Observations on Effect of Anterior Pituitary Extract in Alloxan Diabetes. R. F. Ogilvie.—p. 639.

Neurofibromatosis and Related Lesions.—A case of generalized neurofibromatosis is described in which a malignant growth and spinal curvature were present in addition to the skin lesions. According to the hypothesis advanced in this paper, it is not neurofibromatosis as such that is inherited but a predisposition to the disease, a predisposition that is thought to influence the development of a great variety of lesions at the basic intrinsic factor level, a less varied group of lesions at the neural intrinsic factor level and a still more restricted group of lesions at the neurofibromatosis level. Lesions representative of all three levels may be present in the same person, and, as these lesions may lead to secondary ones, it may prove difficult to discover the etiology. Bone lesions, like spinal curvature, congenital pseudarthrosis of the tibia and small size of certain individual bones, are thought to be related to neurofibromatosis at the basic intrinsic factor level. It is suggested that intrinsic factors may play a part in the etiology of a variety of conditions that occur in patients or their close relatives who, though free from neurofibromas, have one or more lesions belonging to the neurofibromatosis complex, namely, neurilemmoma, meningioma, fibroma, lipoma, angioma, tumors of the glioma group in the brain or cord, tumors of the optic nerve, glial hyperplasia, epilepsy, cutaneous pigmented patches, spinal curvature, congenital pseudarthrosis of the tibia, small size of bones, hydrocephalus and spina bifida.

Lancet, London

1:299-358 (Feb. 10) 1951

Extrapleural Pneumothorax in Treatment of Pulmonary Tuberculosis. M. Murstad.—p. 299.
*Hirschsprung's Disease. M. Bodian, C. O. Carter and B. C. H. Ward. —p. 302.
*Relation of Penicillin Sensitivity in Staphylococci to Clinical Manifestations of Infection. J. C. Sherris and M. E. Florey.—p. 309.
Ureteric Dysmenorrhoea. G. D. Read.—p. 312.
*Changes in Blood Chemistry After Surgical Operations. A. W. Wilkinson, B. H. Billing, G. Nagy and C. P. Stewart.—p. 315.
Potassium Deficiency in Pyloric Stenosis. C. F. Hawkins, T. L. Hardy and H. H. Sampson.—p. 318.
Potassium Deficiency in Idiopathic Steatorrhoea. M. Lubran and P. M. McAllen.—p. 321.
Prolonged Abnormality of Cerebrospinal Fluid After Cisternal Streptomycin. D. Beynon.—p. 322.
Gall-Bladder Disease in Childhood. R. N. Jones.—p. 324.
Treatment of Acute Leukaemia with Aminopterin. J. F. Wilkinson and C. Gardikas.—p. 325.
Danger of Penicillin Therapy in Gonorrhoea. A. A. M. Reekie.—p. 327.
Haemopoietic Effect of Thymidine in Pernicious Anaemia. K. Hausmann. —p. 329.

Hirschsprung's Disease.—Megacolon has been divided into Hirschsprung's disease proper and idiopathic megacolon. The second group is much the commoner, and here megacolon results from chronic constipation. Hirschsprung's disease proper is a congenital malformation, only microscopically demonstrable. Pathologically it is an agenesis of intramural ganglion cells and dysplasia of autonomic nerve bundles. Its functional manifestation is lack of coordinated peristalsis in the affected segment, leading secondarily to an active type of megacolon in the bowel proximal to this. The demonstration by barium enema of undilated or narrow bowel distal to the megacolon is diagnostic. Resection of the inert distal bowel by rectosigmoidectomy is now considered the rational treatment of Hirschsprung's disease. A total of 40 consecutive cases of Hirschsprung's disease (37 in boys) are the basis of this report. A genetic study of the disease was made in the families of 37 of these children. The evidence supports a genetic determination of the disease. The over-all chances of a male sibling of a patient with a known case being affected are about 1 in 5; those of a female sibling being effected are small. Of 37 patients who were treated by rectosigmoidectomy, three died during or after operation and in two others the operation has been very recent. The other 32 children are all in excellent condition. Half of them require no laxatives, and only three complain of occasional abdominal distention. Pathologic studies uniformly revealed the expected picture in the terminal undilated segment of bowel. A review of published reports shows that the length of the involved segment varies significantly. In over 90% of the reported cases there are pathologic changes in the rectum and part or all of the sigmoid colon. Less than 10% of patients have extremely long abnormal segments that appear to be incompatible with life if untreated.

Penicillin Sensitivity in Staphylococci.—In the past three years several bacteriological laboratories have reported an increasing incidence of penicillin-resistant strains of Staphylococcus pyogenes, and some writers have concluded that the clinical value of penicillin is steadily diminishing. It seemed worth while, therefore, to see whether a clear-cut distinction could be established between penicillin-sensitive and penicillin-resistant strains of staphylococci, and, if so, whether this distinction was reflected in the clinical manifestations of infections caused by these organisms. The material for the inquiry was collected between November 1948 and May 1950 from practitioners and from three hospitals. The great majority of the patients from whom the material was obtained had previously received penicillin treatment. There was a clear bacteriological distinction between penicillin-sensitive and penicillin-resistant staphylococci. All sensitive strains were of the same order of sensitivity as the Oxford Staphylococcus, and all the resistant strains produced penicillinase. The two types of staphylococci were in the main associated with different types of lesions—the penicillin-sensitive strains with acute and closed or deep-seated infections, whether acute or chronic, the resistant strains with superficial lesions. The penicillin-resistant staphylococci were significantly less often associated with signs of inflammation or suppuration than the sensitive strains. In view of the different types of lesion with which they were associated, this result cannot be interpreted as indicating that the resistant strains were less virulent than the sensitive, but the difference in the inflammatory signs associated with the two types of infection may help to bring into perspective the clinical importance of the reports of an increasing incidence of penicillin-resistant staphylococci.

Changes in Blood After Operations.—Studies on the effects of surgical operations on nitrogen and electrolyte metabolisms revealed that immediately after operation the urinary excretion of nitrogen and potassium was increased, whereas that of sodium and chloride was decreased. This appeared to be a fundamental part of the body's response to injury and to be independent of the type of surgical operation; it was not abolished by dietary measures. Studies on 30 persons, including four healthy controls, were made to ascertain whether corresponding changes took place in the blood. Changes in the composition and volume of the blood after radical surgical operations followed a general pattern, which was independent of the type of operation or the method of postoperative feeding. In all the patients there was a sudden fall in the plasma protein level, in particular the albumin concentration. In most cases the globulin concentration gradually rose to values well above the preoperative levels. Increases in amount of nonprotein (urea) nitrogen were observed in some patients. Hemoconcentration on the day after operation, followed by hemodilution, was observed in all patients. Changes in hematrocrit values were accompanied by corresponding changes in red blood cell count. An immediate reduction in total blood chloride, with an inconstant reduction in plasma chloride, was followed in most patients by a rise in total blood chloride. There were corresponding changes in the serum sodium. There

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

was some evidence that electrolyte ions were transferred from the plasma to the red blood cells. On the day after operation there was a significant reduction in plasma and blood volume and in the total amounts of proteins and sodium circulating in the plasma. The measurements of the "thiocyanate space," an attempt to determine the volume of extracellular fluid, were not entirely satisfactory. The small changes in the concentrations of the blood constituents indicate the efficiency of differential renal function in assisting the production of the inflammatory exudate; they emphasize the true biological function of the blood as a vehicle.

Medical Journal of Australia, Sydney

1:1-68 (Jan. 6) 1951. **Partial Index**

Internal Medicine: Its Development and Practice in Australia During 50 Years. C. G. McDonald.—p. 1.
Development and Practice of Surgery in Australia During 50 Years. V. Hurley.—p. 5.
General Practice: in Urban Areas. L. Cook.—p. 12.
General Practice: In Country Areas. L. R. Mallen.—p. 16.
Fifty Years of Medical Research in Australia. E. V. Keogh.—p. 24.
Impact of Two World Wars on Medicine in Australia. A. S. Walker. —p. 32.

1:69-104 (Jan. 13) 1951

Medical Education in United States: With Some Reflexions on the Future in Australia. A. A. Abbie.—p. 69.
*The "Trap" Headache. J. Bostock.—p. 80.
Headache of Nasal Origin. R. H. Bettington.—p. 82.
Congenital Heart Malformations in Paediatric Practice. M. L. Powell. —p. 85.

The "Trap" Headache.—In an attempt to discover the cause of his own headaches, Bostock first investigated errors of refraction, but the purchase of glasses with various corrections for his astigmatism had only fleeting effects on the headaches. The septic focus theory and the gastrointoxication theory were then investigated, but neither tonsillectomy nor purgatives had more than a temporary success. Then it was suggested to him that the chief cause is repressed hate. Repressed hate is related to conflict. There is a "war in the mind" between the desirable and the obtainable. There is an underlying frustration; the sufferer is in the "trap." He wishes to escape, but the exits are barred. The situation is "hate-full." When this arises the headache appears. The author gives illustrative examples of "trap" headaches and shows that treatment by psychotherapy is highly satisfactory. He believes that the term migraine should be redefined and suggests a new definition. Headache is the registration in consciousness of changes in potential in the regulating mechanism that provides a neural energy constant. Changes in this potential can be due to organic causes. This accounts for the identical nature of the headache in both organic and psychological types.

Proceedings of Royal Society of Medicine, London

43:937-1136 (Dec.) 1950. **Partial Index**

Antithyroid Substances in Treatment of Hyperthyroidism. D. M. Dunlop and C. F. Rolland.—p. 937.
Mechanism and Prevention of the Rheumatic State. W. H. Bradley. —p. 979.
Radiology of Infected Temporal Bone. H. Graham-Hodgson.—p. 989.
Observations on Extent of Denervation After Thoracic and Thoraco-Lumbar Sympathectomy. M. Wilson.—p. 1065.
Toxic Effect of Streptomycin on VIII Cranial Nerve. J. A. B. Thomas. —p. 1107.
Electro-Encephalography in Relation to Otorhinolaryngology. J. D. Spillane.—p. 1111.

Semaine des Hôpitaux de Paris

27:503-534 (Feb. 14) 1951

Contribution to Study of Intrapulmonary Accumulation of Fat and of Oil Pneumopathy. J. Delarue, R. Depierre, J. Roujeau and J. Paillas. —p. 503.
*Histologic Observations on Icterus Occurring During Treatment with Streptomycin. M. Janbon and L. Bertrand.—p. 510.

Icterus and Streptomycin Therapy.—Needle biopsies of the liver were obtained by anterior thoracic route in seven of 20 cases of icterus occurring during treatment with streptomycin. Microscopic examination of the liver tissue specimens revealed constant periportal infiltration, frequent centrolobular disorganization and a normal aspect of the intermediate liver cell cords except for an increase of pigment and mitosis at the border of the central lesions. These observations suggest that icterus occurring in the course of streptomycin therapy is not related to a toxic action of the antibiotic, but to inoculation hepatitis (homologous serum jaundice), the mechanism and anatomic lesion of which are the same as those of icterus occurring in the course of other methods of treatment in series. The lesions are also the same as those of epidemic hepatitis. Results of biopsy of the liver thus emphasize the infectious nature of homologous serum hepatitis, particularly of the hepatitis observed in the course of streptomycin therapy, and of epidemic hepatitis. Biopsy of the liver thus confirms the experimental findings and epidemiological observations of Havens and of Neefe with respect to inoculation jaundice occurring in the course of other methods of therapy.

Tubercle, London

32:25-48 (Feb.) 1951

Role of Pneumoperitoneum in Treatment of Pulmonary Tuberculosis: Review of 226 Cases. E. L. Williams.—p. 26.
Trauma and Tuberculosis. J. Sumner and E. Nassau.—p. 33.
Relation Between Tuberculosis of Skin and Primary Infection. H. J. Ustvedt and I. W. Østensen.—p. 36.
Diaphragm in Pregnancy. C. J. Stewart.—p. 40.

Ugeskrift for Laeger, Copenhagen

113:107-136 (Jan. 25) 1951

*Bronchography with Water Soluble Contrast Substance. K. Schultz-Møller. —p. 107.
Esophagography and Cancer. H. B. Mathiesen.—p. 116.
Technique in Administration of Epidural Anesthesia in Thoracic Surgery. P. Ottosen.—p. 119.

Bronchography with Water Soluble Contrast Substance.—Schultz-Møller reports on 47 bronchography series done in the course of about a year with water soluble contrast substance. He states that while this procedure is more elaborate and time consuming than bronchography with iodized oil, and requires a larger personnel, the contrast substance disappears rapidly after the examination and never affects later roentgen examination of the lung. It seems to be less injurious to the lung tissue than iodized oil. The method fails less often than bronchography with iodized oil and gives more certain results.

Zentralblatt für Chirurgie, Leipzig

75:1689-1816 (No. 24a [Special Issue]) 1950. **Partial Index**

Primary Resection of Perforated Jejunal Ulcer. E. Wachs.—p. 1690.
Surgical Treatment of Gastric and Duodenal Ulcers in Aged Persons. Schmechel.—p. 1698.
Aspects of Gastric Lipomas. K. Mangel.—p. 1708.
*Linitis Plastica of the Stomach. H. Kolpak.—p. 1712.
Pathology of Meckel's Diverticulum. G. Weise.—p. 1725.
Interposition of Colon Between Liver and Diaphragm. You-Ming Liau. —p. 1728.
Treatment of Ulcerative Colitis. H. Schmorell.—p. 1735.
Pneumococcic Peritonitis. H.-J. Dammermann.—p. 1748.

Linitis Plastica.—Kolpak stresses that the pathogenesis of linitis plastica is not uniform, since inflammatory changes as well as scirrhous carcinoma or carcinoma fibrosum may present the picture of this condition. Thus a diagnosis of linitis plastica does not yet permit a decision as to whether the lesion is benign or malignant. When Brinton coined the term linitis plastica in 1859, he wanted to stress the extraordinary hypertrophy of the submucous connective tissue of the stomach. The author briefly cites the opinions of different authors on linitis plastica and then describes two cases in which the macroscopic aspects of a gastric lesion suggested this condition but in which microscopic examination revealed carcinoma fibrosum (scirrhous carcinoma) in the first patient and colloid (gelatiniform) carcinoma in the second. The author believes that if the surgeon encounters linitis plastica, he should proceed as if the lesion were carcinomatous. Rapidly prepared histologic sections are inadequate for a definite diagnosis. In the course of a thorough histologic study special attention must be given to the marginal portions of the tumor and to the regional lymph nodes, which on superficial inspection may appear normal.

BOOK REVIEWS

The Eye Manifestations of Internal Diseases (Medical Ophthalmology). By I. S. Tassman, M.D., Associate Professor of Ophthalmology, Graduate School of Medicine, University of Pennsylvania, Philadelphia. Third edition. Cloth. $12. Pp. 672, with 279 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1951.

This book offers an important contribution to the medical literature because of its systematic exposition of the relation between various general diseases and ocular pathology. It is a valuable reference book for the internist and specialist in other fields, because it clarifies this relation and provides insight into the ophthalmological aspects. To the ophthalmologist it presents a broad view and emphasizes a relation that is all too easy to minimize in such a highly specialized field.

No new chapters have been added to the present edition, but an attempt has been made to bring all material up-to-date. The first five chapters, dealing with basic anatomical and clinical aspects of ophthalmology, will be of interest chiefly to those without previous ophthalmological training. The chapters on congenital and hereditary eye manifestations and on infections and infectious diseases contain much important information for all readers. In the final chapters there is a systematic discussion of the ocular complications of a wide variety of conditions involving all organs and systems. This portion has particular value as a reference source for rare and unusual conditions, some of them occurring so infrequently as to be unfamiliar in their ophthalmological aspects.

The book is well written and well edited and contains adequate illustrations. It is highly recommended to anyone with an interest in the subject.

Florence Nightingale. By Lucy Ridgely Seymer. Cloth. $1.75. Pp. 154, with 9 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1950.

Intimate details of the life and background of this woman whose name has come to be synonymous with nursing are given in a sympathetic and enthusiastic review of her principal activities. As the author points out, Florence Nightingale, who lived to the age of 90, witnessed a period of great social evolution, and she herself was an important factor in the development of some of the new concepts.

After presenting data on the childhood and youth of Florence Nightingale, as well as her preliminary nursing training, the author gives a detailed report on the important part played by the "Heroine of the Crimea" during that two year war. There are two chapters devoted to this, followed by accounts of her services to various commissions and subcommissions studying army nursing and hospital problems, the founding of her nursing school, and her work for India. There is a chapter on the general subject of her writing, and the final chapter describes her last years, in which she was able to abandon somewhat the aloofness that governed many of her earlier years. An appendix lists the principal events in her life; another contains notes on "minding baby," and a third gives the various biographies of this pioneer nurse.

Klinische Haematologie: Ein Grundriss für Studierende und Ärzte. Von Professor Dr. Werner W. Siebert, Direktor der medizinischen Klinik am städtischen Krankenhaus Moabit, Berlin. Cloth. 31 marks. Pp. 260, with illustrations. Urban & Schwarzenberg, Thierschstrasse 11, München 22; Meinekestr. 13, Berlin W. 15, 1950.

The book is intended as a basic textbook for students and physicians. It serves only this purpose. The text is sketchy, without thoroughness in background or discussion of controversial materials. The illustrations are poor. There is a good section on definitions, which, in view of the confusion in hematological terminology, is most helpful. The section on methodology is also good and adds to the value of the book. The absence of a bibliography represents a grave deficiency. Unfortunately, the book contributes nothing new to the hematological literature.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

An Introduction to the Study of Viruses. By Kenneth M. Smith, F.R.S., Director of Plant Virus Research Unit, Agricultural Research Council, Molteno Institute, Cambridge. Cloth. $2.50. Pp. 106, with 16 plates. Pitman Publishing Corporation, 2-6 W. 45th St., New York 19; Sir Isaac Pitman & Sons, Ltd., Pitman House, 39-41 Parker St. Kingsway, London, W.C.2, 1950.

This book reflects the author's attempt to discuss the viruses causing disease in man, animals, and plants in one volume. The book is divided into chapters presenting the history of virology; the modes of spread and arthropod relations of viruses; a brief description of some representative virus diseases, and the isolation, physical and chemical properties, electron microscopy, serology, and control of viral infections.

This small volume is fascinating reading. The author certainly has the faculty of condensing an enormous richness of material into a few pages and presenting it in such a way that medical, veterinary, and plant virologists can equally profit from its reading. The plates contain excellent black-and-white illustrations, mostly microphotographs by Markham and Smith. The last pages of the book consist of a well-selected bibliography.

The Conquest of Malaria. By Dr. Jaime Jaramillo-Arango. Cloth. 21s. Pp. 125, with 36 plates. William Heinemann, Ltd., 99 Great Russell St., London, W.C.1, 1950.

In this small volume, the author attempts to recall the historical struggle against malaria and to record the names of pioneers who have added most important, fundamental contributions to the knowledge and treatment of the disease. It is divided into three parts: the mosquito-malaria theory, a critical review of the basic facts in the history of cinchona, and progress in the knowledge and treatment of malaria. About three-quarters of the book is devoted to the first two parts, which are treated in a comprehensive manner. Antimalarial drugs other than cinchona derivatives are dealt with very sketchily in part 3. Chlorguanide hydrochloride ("paludrine"), which receives major attention in the last part of the book, could be more adequately discussed, and the vast amount of research carried out in the United States during World War II receives most superficial discussion. Practically no mention is made of the importance of insecticides and DDT, which will probably prove of greater value than all therapeutic measures in the ultimate conquest of malaria.

The book is readable but cannot be recommended as a well-balanced monograph on the history of antimalarial therapy.

Florence Nightingale 1820-1910. By Cecil Woodham-Smith. Cloth. $4.50. Pp. 382, with illustrations. McGraw-Hill Book Company, Inc., 330 W. 42d St., New York 18; Aldwych House, Aldwych, London, W.C.2, 1951.

Cecil Woodham-Smith has developed an unsual story of Florence Nightingale, which goes far beyond any previous biography because of her access to letters and documents never before used in the Nightingale story. The early chapters covering the period of Florence Nightingale's life up to the time of her training as a nurse are really a study in psychiatry. During this period, the conflicts of an ambitious young lady with a family who wanted her to be a social butterfly led her to the verge of a psychosis, which is well described by Mrs. Woodham-Smith.

The description of Florence Nightingale's baptism of fire during her training period and the Crimean War reports in detail physical and administrative conditions that were intolerable. The detailed analysis of the problems at hand and Miss Nightingale's reaction to them makes one feel that one is living with her as part of her inadequate staff.

Shortly after her return to England, Miss Nightingale suffered a physical exhaustion which caused her to be bedridden for most of the rest of her long life. Yet, in spite of this, she accomplished many remarkable things that had never been accomplished by anyone in the best of health. The political manipulation carried on in the government in England, particularly in the War Department and in the Indian Office, was sufficient to break many powerful politicians; yet, working from her bed, Miss Night-

ingale analyzed the situation so as to direct her work toward reasonably successful conclusions and was able to command the respect of all who worked with her. Her many interests are astonishing and are well set forth in this biography. Not only did she raise nursing to the level of a profession, but she established visiting nursing, improved hospital construction and administration, was deeply concerned with environmental sanitation, rearranged the administration of the entire medical service of the army, and made many contributions to the broad field of social welfare, particularly among the underprivileged classes of England. As so often is the case, her real recognition did not come until she was too old to understand, in spite of the fact that during her entire period of activity she received the continuing appreciation of the soldiers whom she served during the war.

Any physician involved in administrative medicine or concerned with the problems of government as they relate to medicine should read Mrs. Woodham-Smith's "Florence Nightingale 1820-1910." Any physician in an administrative position who feels that he has problems will discover that the problems that he has are insignificant when compared with the administrative problems that Miss Nightingale had throughout the greater portion of her life.

Taschenbuch der inneren Medizin. Von Prof. Dr. Walter Seitz, Direktor der Med. Univ. Poliklinik München. Cloth. 15 marks. Pp. 344, with 15 illustrations. Wissenschaftliche Verlagsgesellschaft m. b. H., Tübinger Strasse 53, Stuttgart-1, 1950.

This little pocketbook measures 5 by 7 inches and is described on the jacket as designed to present the entire knowledge of internal medicine in epitomized form. The contents, in 18 sections, cover diseases of the lungs, pleura, blood vessels, heart, blood-forming organs, upper and lower digestive tract, liver, biliary system, pancreas, kidneys, lower urinary organs, locomotor system, endocrine system, and also diseases due to animal parasites, disorders of metabolism, infectious diseases and the commoner poisons. In addition, there is a table of notifiable infectious diseases, which in the United States, however, varies from state to state, and the incubation period of the infectious diseases is listed in another table.

The descriptions of the various diseases usually follow a fixed order covering their origin, symptomatology, diagnosis, treatment, and prognosis. The attempt to include the entire field of internal medicine in so cramped a space means considerable compression, though the author usually manages to present the important data in clear language. It is true that there are occasional errors and omissions: the malaria of drug addicts, rat bite fever, and ornithosis are not mentioned, nor is heroin and marihuana addiction. These lacunae do not detract from the high informative level of most of the material presented.

The book is well printed on good paper, but the type, though clear, is small. The cloth binding is substantial and attractive. There are a few well-designed diagrammatic illustrations and a good index. No bibliographic references are included. The scope of internal medicine has so widened in the past half century that it is a difficult feat to cover the field completely in such small compass, but a book of this type is doubtless of some value for quick reference or for a rapid review of the subject.

Blood Clotting and Allied Problems: Transactions of the Third Conference, January 23-24, 1950, New York, N. Y. Edited by Joseph E. Flynn. Cloth. $3. Pp. 224, with 52 illustrations. Josiah Macy, Jr. Foundation, 565 Park Ave., New York 21, 1950.

This book contains the verbatim report of the formal and informal discussions of many aspects of blood clotting by the following experts: L. B. Jaques, A. U. Blaustein, I. S. Wright, L. M. Tocantins, C. E. Brambel, F. D. Mann, A. J. Quick, J. E. Flynn, K. M. Brinkhous, J. A. Ferguson, N. W. Barker, J. T. Edsall, J. H. Olwin, R. S. Overman, W. H. Seegers, B. Alexander, J. G. Allen, H. J. Tagnon, G. E. Burke, J. D. Ferry, L. A. Wood, and others.

The discussions are centered specifically around the newer anticoagulants, "danilone" (phenylindanedione [PID]), ethyl biscoumacetate (tromexan® ethyl acetate), and paritol® (a sulfated mannuronic acid); the use of vitamin K in anticoagulant therapy; the mode of action of bishydroxycoumarin (dicumarol®); problems of prothrombin assay, and accessory factors needed for coagulation.

This book contains the latest advances in the field of coagulation, presented and discussed by those who have made these advances. For those interested in blood clotting, this book is highly recommended and even required. For the student and practitioner, it is too technical and academic to be very useful.

Progressive Resistance Exercise: Technic and Medical Application. By Thomas L. DeLorme, B.S., M.D., Assistant in Physical Medicine, Massachusetts General Hospital, Boston, and Arthur L. Watkins, A.B., M.D., Assistant Clinical Professor of Medicine, Harvard Medical School, Boston. Foreword by Joseph S. Barr, M.D. Cloth. $5. Pp. 245, with illustrations. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1951.

Interest in progressive resistance exercise has developed rapidly since Dr. Thomas DeLorme initiated studies concerning this type of exercise at the Gardiner Army General Hospital in Chicago during World War II. Drs. DeLorme and Watkins have now prepared an excellent general textbook describing in careful detail the technic and medical application of this particular type of exercise. As mentioned in Dr. Barr's foreword, the system of exercises described "has a sound physiologic basis and muscles subjected to this type of exercise can be shown to have increased power both to the satisfaction of the patient and the physician."

The book is divided into ten sections: (1) introduction, (2) physiology by Frances A. Hellebrandt, (3) principles, (4) technics, (5) fractures, (6) knees by Francis E. West, (7) hips, (8) neurological conditions, (9) medical conditions, and (10) adolescents by J. Roswell Gallagher.

A common error is to attempt to restore muscular power by endurance-building exercises. Power is best restored when one offers heavy resistance to muscular effort. The authors have devised elaborate apparatus and detailed technics for progressive resistance exercises and then have discussed carefully the indications for the restoration of muscular power by means of these progressive resistance exercises. As pointed out by Dr. Barr, the technics described have been tested by practical clinical use. The volume should be useful to physicians interested in physical medicine, orthopedists, and other physicians who are concerned with problems of muscular rehabilitation, as well as to the therapists who assist such physicians.

Die Tuberkulose: Ihre Erkennung und Behandlung. Von C. Arold, et al. Herausgegeben von Prof. Dr. Hellmuth Deist und Prof. Dr. Hermann Krauss. Cloth. 68 marks. Pp. 754, with 297 illustrations. Ferdinand Enke, Hasenbergsteige 3, Stuttgart, W., 1951.

This textbook has been compiled in the best tradition of the comprehensive German "Handbuch." It deals thoroughly with all aspects of the diagnosis and treatment of tuberculosis. The thirteen chapters include pathology, microbiology, chest, orthopedic, childhood, abdominal, urogenital, skin, eye, ear, and upper respiratory tract tuberculosis, with a special section on the surgical treatment of the pulmonary localizations of this disease. In spite of the differences in the approach of the various coauthors to the subject, tuberculosis is considered throughout the entire book as a generalized disease with local manifestations. On the whole, the concepts of Schroder, Sauerbach, and Brauer are being followed and enlarged. There is a real richness of material and references, especially from Germany. One misses, for example, Western methods of laboratory diagnosis and prevention of tuberculosis. Most of the illustrations are very good, especially the histologic sections. The book has been carefully edited and printed.

Diabetes Guide Book for the Physician. Paper. Gratis. Pp. 79. American Diabetes Association, Inc., 11 W. 42nd St., New York 18, 1950.

This convenient pocket-sized book was prepared by the Committee on Education of the American Diabetic Association. Intended as a guide for physicians, it covers in outline form the commonly accepted procedures of diagnosis and treatment of diabetes mellitus, hypoglycemic reactions, and diabetic coma. The section dealing with the calculation of diabetic diets is particularly instructive. The principle of food exchanges is explained, and a number of sample meal plans are listed. Short lists of references suitable for the physician and for both the patient and the physician have been included. This little manual will undoubtedly live up to its aim, to help the busy medical practitioner give his diabetic patients effective treatment.

QUERIES AND MINOR NOTES

FLUORINE IN PUBLIC WATER SUPPLIES

To the Editor:—*There is much talk about the fluorination of public water systems. I would like to know about the toxicology of such water solutions of fluorine. 1. At what concentration will mottling of the teeth probably occur? 2. At what concentration will general systemic symptoms occur, and what would the symptoms be? 3. What concentration of fluorine in drinking water is necessary to produce death in a human?*

H. Curtis Wood, M.D., Philadelphia.

Answer.—1. Mottling of the teeth will probably occur when the concentration of sodium fluoride is 2 to 5 parts per million (2 to 5 mg. per liter). Smith and Smith (Technical Bulletin, Arizona Agriculture Experimental Station, No. 43, 1932) found that mottling did not occur when the water contained less than 2 ppm. Later, Smith, Lantz and Smith (*J. Am. Dent. A.* **22**:817, 1935) found the threshold concentration may be as low as 1 part per million. Lansbury (*M. Clin. North America* **28**:1428, 1944) states: "The optimum intake of fluorine is probably about 1 milligram per day or a water supply containing 0.9 parts per million. The amount of fluorine in water sufficient to cause fluorosis (mottled enamel) is 1.7 or more parts per million."

2. Lansbury also states: "Exposed workers may ingest as much as 25 mg. a day which in a year or so results in chronic fluorine poisoning. Chronic fluorine poisoning is characterized primarily by mottling of the enamel of the teeth, osteosclerosis and other miscellaneous findings.

"It is rather generally agreed that toxic symptoms appear with the ingestion of a single dose of from ¼ gram to 1 gram of sodium fluoride, the toxic dose depending on the conditions existing in the individual at the time of ingestion. The symptoms include vomiting, abdominal pains and diarrhea."

3. The fatal dose of sodium fluoride appears to be about 3 to 4 Gm. This again depends on the conditions existing at the time of ingestion. Thienes, (Clinical Toxicology, Philadelphia, Lea & Febiger, 1940, p. 167) states that 0.25 Gm. has caused nausea and 4 Gm. has caused death. Greene (*U. S. Nav. M. Bull.* **43**:551, 1944) states that the fatal dose is between 5 and 10 Gm. This agrees with Lidbeck, Hill and Beeman (*J. A. M. A.* **121**:826 [March 13] 1943), who state: "The symptoms of acute fluorine intoxication include vomiting, abdominal pain, diarrhea, painful spasms and paresis, excessive salivation, perspiration and dyspnea. Death is usually attributable to respiratory paralysis."

INFECTIOUS HEPATITIS IN A SURGEON

To the Editor:—*I recently returned from the Korean war with severe infectious hepatitis, for which I am now being treated. As a surgeon, I wonder what the possibilities are of transmitting this disease to any patient on whom I may operate in the future by such an accident as pricking my finger with a suture needle during an operation. Is it known how long this virus remains in the body after clinical recovery? How long should I wait before I begin operating again?*

Harold F. Hamit, M.D., Fort Sam Houston, Texas.

Answer.—It is difficult to provide an exact answer to this very pertinent question. The period during which viremia persists in epidemic hepatitis is unknown, but the preponderance of evidence seems to indicate that it does not extend into the convalescent period. The experience of Murphy (*Gastroenterology* **5**:449 [Dec.] 1945) shows the IH virus is almost certainly present in the blood during the preicteric phase, and it may possibly persist for a short time thereafter. Beyond this point, proof of viremia is lacking.

An authority on the epidemiology of hepatitis has said: "In respect to the question of duration of viremia with virus IH infection, there are no adequate data concerning this point. The few volunteers whose sera were tested late in jaundice and several weeks afterwards proved not to have infectious sera. However, in another group with persistent mild findings for some months, vague phenomena suggesting mild hepatitis occurred in volunteers inoculated with sera, stool and liver biopsy material collected at intervals after the acute attack (*J. Clin. Investigation* **26**:329 [March] 1947). From a practical viewpoint, as there is no way of setting a time limit in reference to this question, I would be inclined to advise the patient to ignore this question. One really has no data to say that he would be any less likely to be infectious six months from now than shortly after recovery from the acute attack."

A second authority, to whom this question was referred, replied as follows: "I do not know of any reliable information on the duration of viremia in infectious hepatitis. Virus has been recovered from the feces as long as two months after an acute attack, and there is reason to believe that in certain individuals it may be present for longer periods. I feel confident that in some individuals it may be present in the blood for considerable periods, but this is not documented with any degree of certainty."

In view of the very large number of persons who have had the disease and who have not been restricted in their activities because of it, it would not seem that any limitation should be imposed.

The following references are suggested: Neefe, J. R.: *M. Clin. North America* **30**:1407 (Nov.) 1946. Neefe, J. R., and Stokes, J. Jr.: *J. A. M. A.* **128**:1063 (Aug. 11) 1945. Neefe, J. R., Gellis, S. S., and Stokes, J. Jr.: *Am. J. Med.* **1**:3 (July) 1946.

CLICKING IN THE EARS

To the Editor:—*What causes continuous "clicking" in a patient's ears? The condition has been present for five years and has increased in intensity and is audible to anyone who listens. The clicking simulates clacking castanets and occurs with definite regularity. Inspection of the drums fails to reveal motility. There is no appreciable hearing loss. The eustachian tubes are patent to catheterization and inflation without apparent diminution of the clicking sounds.*

E. S. Hallinger, M.D., Camden, N. J.

Answer.—Adventitious sounds from the ear can come from rhythmic opening of the eustachian tube with an audible sound, from the blood vessels in the form of a bruit or from spasmodic contractions of the intratympanic muscles, that is, the stapedius or tensor tympani. Normally, these muscles contract only reflexly to loud sounds as a protective mechanism against overstimulation of the inner ear. In some persons, involuntary rhythmic contractions of these muscles occur analogous to the tic of the muscles around the eye or elsewhere. There is no local treatment. The use of a mild sedative might be of some help, and reassurance that this is nothing serious is helpful.

ASTHMA IN A COTTON MILL WORKER

To the Editor:—*A 55 year old man has spent 30 years working in a cotton mill. He has suffered from bronchial asthma for 25 years and for the past three years from bronchiectasis. His general health is fairly good. He weighs 190 pounds (86 Kg.). At times his asthmatic condition becomes almost intolerable. I would like information regarding treatment.*

J. L. Powe, M.D., Hartsville, S. C.

Answer.—It does not immediately follow that the conditions described result from exposure in a cotton mill. The conditions mentioned are common, apart from employment. It is well recognized that a pulmonary state termed "byssinosis" or "mill fever" occurs among cotton workers; it is variously regarded as either allergic or resulting from a specific infection. Byssinosis

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

in cotton mills is little known in the United States; it is commoner in England. In the uncertainty of the occupational origin of the asthma, it may be well to conduct suitable tests seeking specific causes. The detection of the precise cause, whether cotton, house dust, animal dander or cosmetics, may prove the salient step toward management. Otherwise the treatment for the acute episodes should be symptomatic and as for any other spasmodic asthma. Until recently treatment for bronchiectasis, with or without asthma, has been unpromising. More recently good and prolonged results have been achieved through the use of antibiotics as aerosols. Penicillin so applied irregularly has proved valuable. Streptomycin in conjunction with penicillin may be preferable. Regardless of the cause, treatment should conform to that required for any other bronchial asthma and any idiopathic bronchiectasis.

ANNUAL X-RAY EXAMINATIONS

To the Editor:—*A man in his late forties suffered from pseudo ulcer symptoms and hyperacidity in his younger years. In the last 10 years gastric analyses indicated a slight hyperacidity. Because of recurring complaints and gastric cancer in his father, he has been advised to have yearly x-ray examinations; about 14 such tests have been done. There are no changes of the skin or hair. Is it advisable to continue this procedure in order to detect any probable malignancy at an early stage?* *M.D., Illinois.*

Answer.—Walters, Gray and Priestley (Carcinoma and Other Malignant Lesions of the Stomach, Philadelphia, W. B. Saunders Company, 1942) in reviewing 2,772 operative cases of carcinoma of the stomach, noted a positive family history of malignancy in 20 per cent of the cases. Others have also reported data suggesting that heredity plays a role in carcinoma of the stomach. It is reasonable, therefore, to keep a dyspeptic, in whom a strong family history of carcinoma is elicited, under closer surveillance than average. Such persons should be reasonably protected by yearly examination, unless a significant change of symptoms occurs, in which case more frequent examinations may be necessary.

If the factors of exposure to roentgen rays, both with respect to the roentgenoscopic and the roentgenographic examinations, are kept to a minimum, or within well defined physical limits, an adequate examination of the stomach can be done at yearly intervals or oftener with perfect safety. If these exposure factors are exceeded, there is definite hazard in the excessive irradiation to which the patient is exposed, whether a single or repeated examinations are done.

HOT FLASHES AND ENDOMETRIOSIS

To the Editor:—*A 45 year old patient had a left ovarian cyst removed; her right ovary, also cystic, had been removed 10 years previously. She had multiple endometriomas of the bowel, one of which was subjected to biopsy. She is now having hot flashes. Could small doses of diethylstilbestrol be given to control these with safety, or would the drug in any amount stimulate the remaining endometriomas? The pathologist's report read "functioning" endometrioma. If diethylstilbestrol can be used, in what dosage? If it is not safe to use, what may be substituted?* *M.D., Massachusetts.*

Answer.—There is some disagreement on this subject. Formerly it was thought that any estrogen would stimulate endometriosis and make it progress. More recent studies indicate that in patients who have endometriosis and also have their ovaries or parts of them, large doses of diethylstilbestrol prevent ovulation, and it is thought by some to make the lesions regress. In patients without ovaries, endometriosis is stimulated exactly as is the endometrium, and certainly large doses, or medication given over a long period of time, will make the endometrium function wherever it is located. Most patients in past years were treated with drugs other than estrogens and in most cases were fairly comfortable. Thyroid in small doses is helpful as are any of the mild sedatives, especially used at night or during periods of undue stress. Of most importance is psychotherapy and rearrangement of the patient's habits to avoid friction of one sort or another and to relieve emotional upsets. Male sex hormones can be used, but here care must be used not to overdose and produce masculinization. In isolated instances, if the condition could be controlled in no other way, one could use small doses of diethylstilbestrol, 0.1 or 0.2 mg. daily for short periods of perhaps a week unless pain developed from one of the nodules.

PROGRESSIVE MUSCULAR DYSTROPHY

To the Editor:—*In a family of five children, the oldest boy, now 13, began to get weak in the legs at the age of 5 and finally became weak all over. He now is helpless in a wheel chair. Twins, a boy and a girl, age 5 years, have to catch things to get up when sitting down. The diagnosis is muscular dystrophy or myasthenia gravis. Physicians can offer no encouragement as to recovery. What is the cause of this disease?* *J. P. Powell, M.D., Dalhart, Texas.*

Answer.—The diagnosis here is obviously progressive muscular dystrophy, not myasthenia gravis. Unfortunately there is no known treatment of value for this condition, and it is the natural history of this condition to grow gradually worse. The only recommendation that can be offered is that this family have no more children, as this is definitely a hereditary disease.

CYCLOPROPANE SHOCK

To the Editor:—*In* The Journal *of March 3, 1951 (page 688), the answer to the inquiry on "Cyclopropane Shock" fails to mention a procedure that has been found to prevent or at least minimize this "shock." It was taught by Waters and is mentioned by Dripps in the reference given in the answer. In the last five to 15 minutes of anesthesia the patient is allowed to inhale a gaseous mixture brought increasingly closer to room air in oxygen content and temperature. This is accomplished by use of a semiclosed carbon dioxide absorption technique with a large volume flow of gas. It is most conveniently done with nitrous oxide and oxygen. Starting with a flow of 2 liters per minute each of nitrous oxide and oxygen, one gradually increases the flow of nitrous oxide to 8 liters per minute of nitrous oxide by the end of the operation. The flow of oxygen is maintained at 2 liters per minute. This procedure gradually lowers the concentration of oxygen in the inspired mixture to that in room air, allows for a slow elimination of the carbon dioxide excess built up during anesthesia with a closed carbon dioxide absorption system and decreases the temperature of the inhaled gases toward that of room air.*

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PERIODIC ATTACKS OF DIFFUSE ABDOMINAL PAIN AND DIARRHEA

To the Editor:—*In the Feb. 24, 1951 issue of* The Journal *(page 605) aid is sought in explaining recurrent attacks of abdominal pain at weekly intervals for two years. The reply gives a number of probable causes and methods of diagnosis but fails to mention the possibility of periodic abdominalgia. Your columns have been a fertile source of reports of other unusual periodic conditions which I have added to my collection; yet in not one of the replies to queries has the possibility of periodic disease been mentioned. Studies of these conditions have been published twice in* The Journal *(***136:***239 [Jan. 24] 1948,* **141:***175 [Sept. 17] 1949). Some of the more interesting queries with replies may be listed: Obscure Fever in a Child (***141:***958 [Nov. 26] 1949), Recurrent Herpes of Penis (***139:***1303 [April 30] 1949), Pain in Penis and Perineum (***143:***210 [May 13] 1950), Polyarthritis (***139:***192 [Jan. 15] 1948). The query on Familial Periodic Pain (***139:***1123 [April 16] 1949) led to the study of a family in which 23 members had life-long recurrent attacks of arthralgia, the report of which soon will appear in* The Journal. *Evidently recurrent disorders of various kinds occur often in general practice as diagnostic and therapeutic problems.*

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